

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASM IP HOLDING B.V.
Petitioner,

v.

KOKUSAI ELECTRIC CORP.,
Patent Owner.

Case No. IPR2019-00369

Patent No. 7,808,396

PATENT OWNER'S PRELIMINARY RESPONSE

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PATENT OWNER'S EXHIBIT LIST

<u>Exhibit</u>	<u>Description</u>
Ex. 2001	McGraw-Hill Dictionary of Scientific and Technical Terms, 6th Ed. (2003)

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.107(a), Patent Owner hereby submits the following Preliminary Response in response to the Petition for *Inter Partes* Review of U.S. Patent No. 7,808,396 (“the ’396 patent”).

The ’396 patent contains 10 claims, of which claims **1**, **9**, and **10** are independent, and the Petition proposes four grounds of unpatentability:

- **Ground 1** alleges that independent claim **1** and dependent claims 2-3, and 6-8 would have been obvious in light of the teachings of Korean Patent Application KR 2003-0058863 to Kang et al. (“*Kang*”), as modified by the teachings of a user operations manual for a **Tencor P-20h Long Scan Profiler** (“*Tencor Manual*”) and U.S. Patent No. **5,859,885 to Rusnica et al.** (“*Rusnica*”);
- **Ground 2** alleges that dependent claims 4 and 5 would have been obvious in light of the teachings of Kang, the *Tencor Manual*, *Rusnica*, and U.S. Patent No. 7,079,984 to Eryurek et al. (“*Eryurek*”);
- **Ground 3** alleges that independent claim **9** would have been obvious based on the teachings of the *Tencor Manual* alone; and,
- **Ground 4** alleges that independent claim **10** would have been obvious in light of the teachings of the *Tencor Manual* and *Kang*.

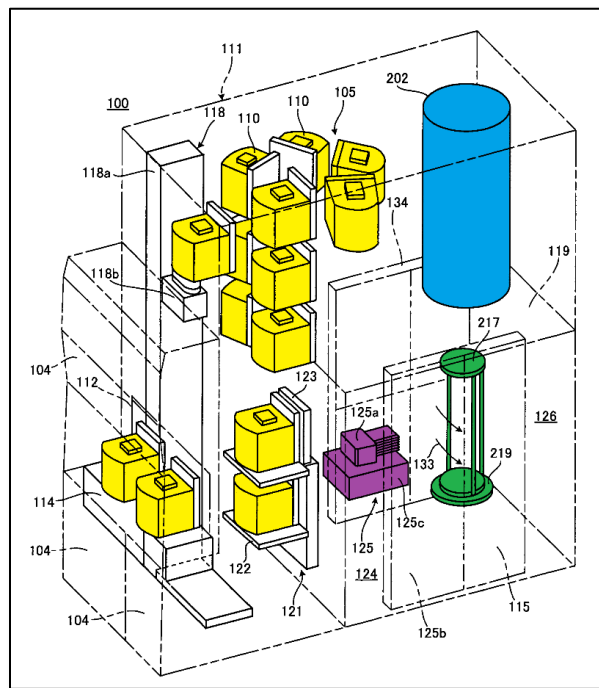
As explained in greater detail below, the Board should deny institution because Petitioner has not met its burden to show that any of the challenged claims are likely to be shown to be unpatentable on the basis of its Petition because it **does not establish the prior art status of the art on which it relies**.

In particular, the asserted grounds of unpatentability for all claims rely on the *Tencor Manual*, and the asserted grounds for all but two claims rely on *Rusnica*. But, as described in **Section III** below, Petitioner has not shown that the purported *Tencor Manual* (Exhibit 1005) qualifies as a prior art printed publication. Furthermore, as described in Section IV, Petitioner also has not shown—and cannot show—that the challenged claims are obvious because its grounds of unpatentability rely on **non-analogous art**. The *Tencor Manual* relates to a general purpose surface measurement device, and *Rusnica* relates to control room operations for a nuclear power plant. Neither reference relates to the field of semiconductor processing, nor the problems encountered in that field.

Because these deficiencies apply across all of Petitioner's asserted grounds of unpatentability, and because Petitioner cannot show that any challenged claim is reasonably likely to be found unpatentable, the Board should deny institution.

II. BACKGROUND OF THE '396 PATENT

The specification of the '396 patent teaches that Figure 1 (reproduced below with colored annotations) illustrates an exemplary substrate processing apparatus that the invention may be “applied to.” Ex. 1001, 4:36-43. The processing of the substrates is carried out by the “processing furnace 202” (annotated in blue below). *Id.*, 7:11-16. In order for the substrate processing to be accomplished, a predetermined number of wafers are loaded into the “boat 217” (green below) which is then transported into the processing furnace. *Id.*



Ex. 1001, Fig. 1 (color annotations added).

The substrate processing apparatus disclosed in the '396 patent uses a plurality of substrate containers, each referred to as a “pod 110” (yellow above), to

house and transport wafers “made from silicon and the like” within the apparatus. *Id.*, 4:44-48. “When the pod 110 is opened by the pod opener 121, the wafers 200 are picked up from the pod” and transferred to the boat “by the wafer transfer mechanism 125” (purple above). *Id.*, 6:61-7:10. After “a predetermined number of wafers 200 is loaded on the boat 217,” the boat is then carried by a boat elevator into the processing furnace. *Id.*, 7:11-16. Once loading is complete, “processing is performed on the wafers 200 in the processing furnace 202.” *Id.*, 7:17-18.

III. PETITIONER HAS NOT MET ITS THRESHOLD BURDEN TO SHOW THAT THE P-20H OPERATIONS MANUAL IS A PRINTED PUBLICATION

Petitioner bears the burden of persuasion to prove unpatentability of the challenged claims. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). The Board has required that, in order to institute trial, the petitioner must “make a threshold showing that the reference relied upon was **publicly accessible** as a printed publication prior to the effective filing date of a challenged patent” to interested members of the public. *Mylan Pharm. Inc. v. Boehringer Ingelheim Int’l GmbH*, IPR2016-01565, Paper 17 at 16-17 (PTAB Feb. 9, 2017). But Petitioner has not met this threshold burden to show that one of its primary references, the “**Tencor P-20h Long Profile Scanner Operations**

Manual” that Petitioner refers to as “Tencor,”¹ was “disseminated or otherwise made available to ... persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence.” *SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008).

As the grounds for all of the challenged claims rely on this *Tencor Manual*, Petitioner has not, and indeed cannot, make a threshold showing that at least one claim is reasonably likely to be unpatentable. In particular, Petitioner has not met its threshold burden to establish that Exhibit 1005 is a printed publication for four reasons. *First*, as explained below in Subsection III(A), even if the Board accepts the accuracy of Petitioner’s testimonial and documentary evidence, Petitioner cannot show that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence could have obtained the *Tencor Manual*. *Second*, as explained below in Subsection III(B), Petitioner’s purported evidence regarding resellers of the P-20h surface profiler does not support a finding that the *Tencor Manual* was publicly accessible. *Third*, as explained below in Subsection III(C), neither the dissertation nor the journal article identified by Petitioner cites to or otherwise references the *Tencor Manual*, undercutting Petitioner’s arguments

¹ Referenced herein as the *Tencor Manual* to avoid confusion with the entity KLA-Tencor and/or its predecessors-in-interest.

regarding these documents. *Fourth*, as explained below in Subsection II(D), Petitioner has made little to no effort to authenticate the majority of the documents relied upon to argue that the *Tencor Manual* was publicly accessible.

A. The *Tencor Manual* Was Not Accessible to the Public

A petition must include a “full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence,” and must “identify the specific portions of the evidence that support the challenge.” 37 C.F.R. §§ 42.22(a)(2), 42.104(b)(5). Because Petitioner has failed to make a threshold showing that the *Tencor Manual* submitted as Exhibit 1005 qualifies as a printed publication, none of the challenged claims can be found unpatentable on the basis of Petitioner’s Petition. *HTC Corp. v. Cellular Commc’ns Equip. LLC*, IPR2016-01503, Paper 7 at 17-19 (PTAB Feb. 13, 2017) (denying institution based on Petitioner’s failure to make a threshold showing of public accessibility regarding non-patent literature).

As noted above, Petitioner has submitted what appears to be a version of an **operations** manual “for individuals who will use the P-20h to **inspect and analyze sample surfaces**.” Ex. 1005 at 12. Exhibit 1005 states that there were at least three separate manuals for the P-20h profiler, including the manual submitted as Exhibit 1005 itself. *Id.* (identifying two “Related Manuals,” a “Reference Manual” and an “Interface Manual”). The version of the operations manual submitted as

Exhibit 1005 has a notation on the front signifying that this was revision “Rev. F,” which Petitioner asserts was published in January 1996. Pet. at 19. In essence, Petitioner argues that because “[c]ustomers purchasing the P-20H were given copies” of the device’s manual, it was accessible to “interested persons and persons of ordinary skill in the art.” *Id.* (citations omitted). But the *Tencor Manual* cannot qualify as a printed publication for three reasons.

First, Petitioner confuses the issues by arguing that a product was available, and not the *Tencor Manual* itself. Petitioner provides a declaration from a Mr. Brian Crawford, who testifies that he is “an employee of KLA-Tencor Corporation” and that the *Tencor Manual* was provided to customers along with the P-20h surface profilers that were sold to KLA-Tencor’s customers. Ex. 1009, ¶¶ 1-2, 6-7. Mr. Crawford, however, never testifies that the specific “Rev. F” *Tencor Manual* was itself publicly accessible such that it could have been requested by interested members of the public (*e.g.*, non-customers who had not purchased a very expensive P-20h long scan profiler), or that the manual itself was otherwise accessible or distributed to the public.

In an attempt to address this glaring issue, Petitioner separately submits a webpage screenshot that it alleges shows that customers could purportedly receive

copies of certain product manuals “upon their request.” *See* Pet. at 19; Ex. 1022.²

Notably, however, while this webpage **lists over 30 KLA-Tencor product manuals** that are purportedly available to be ordered by KLA-Tencor customers, it **fails to list** any version of the “P-20h Long Scan Profiler Operations” *Tencor Manual*. *See* Ex. 1022 at 2-3. As such, this webpage not only fails to support Petitioner’s position, but it shows that the *Tencor Manual* was not publicly available via KLA-Tencor’s website as proposed by Petitioner. Petitioner also does not allege that KLA-Tencor would have provided copies of the *Tencor Manual* to **non-customers**, *i.e.*, the interested public, upon request.

The Board has repeatedly denied institution when IPR petitioners have relied on product manuals of dubious provenance, public accessibility, and/or distribution. For example, the Board has held that submitting a declaration that showed that “corporate customers received” copies of the cited manual did not meet the petitioner’s burden to show public accessibility. *VMAC Global Techs. Inc. v. Vanair Mfg., Inc.*, IPR2018-00670, Paper 9 at 11-15 (PTAB Aug. 10, 2018). Although the Board fully credited the declaration’s testimony, the Board was

² As explained in Section III(D), Petitioner has made little or no attempt to authenticate this or any other webpage printout relied upon to show what was allegedly available to the public at the relevant time frame.

unconvinced given that the manual clearly stated that “[t]he contents of this manual may not be reproduced in any form without [] express written permission.” *Id.* at 13-14 (collecting Federal Circuit and PTAB cases where restrictions on copying and dissemination were found to defeat any showing of public accessibility). Furthermore, the Board noted that, even though customers may have received copies of the manual when they purchased a product, the record did not show “that the customers knew of and requested” the manual on its own merit, or that the manual’s owner “provided (or would have provided) the[] manual to non-customers on request.” *Id.* at 13.

In a similar vein, the Board has previously declined institution when petitioners rely on statements of general availability of the associated **product**, rather than evidence that an associated manual was publicly available. *See Nikon Corp. v. ASML Netherlands B.V.*, IPR2018-00227, Paper 9 at 27-28 (PTAB June 4, 2018) (“Although it is not unreasonable to assume that the HP850 camera was sold with an operation manual and that the user manual bearing a single copyright notice dated 2002 is not a version created after 2002, Petitioner has not offered specific evidence that the manual it identifies is the manual provided with the product in the Amazon advertisement or corresponds to the manual referenced in the product review exhibit.”); *H&S Mfg. Co., Inc. v. Oxbo Int’l Corp.*, IPR2016-00909, Paper 7 at 11 (PTAB Oct. 18, 2016) (“We are not persuaded, based on the

facts of this case, that the presence of a copyright notice ... and a generic reference to the ‘nature’ of a document is sufficient to support a threshold showing of public accessibility”). The Board should deny institution here for the same reasons.

Second, rather than provide any documentary evidence corroborating its argument that KLA-Tencor made the *Tencor Manual* accessible to the public, Petitioner asserts that the P-20h device, and allegedly the manual along with it, could have been obtained from third-party resellers. Pet. at 20. But even if the “resold” P-20h devices allegedly shown in Petitioner’s exhibits could have been shipped to buyers and such resold devices included the “Rev. F” of the *Tencor Manual* (which Petitioner has not shown), that still would not mean that the *Tencor Manual* was accessible to the public.³ Far from it, these listings suggest that—even on the resale market—a person interested and ordinarily skilled in the art would have had to pay **at least \$65,000** for a P-20h surface profiler. Ex. 1016 at 23. The most logical assumption is that a new P-20h surface profiler would have cost at least the same, if not more.

But \$65,000 is “too high to consider the document accessible to the interested public.” *Virginia Innovation Scis., Inc. v. Samsung Elecs. Co., Ltd.*, 983

³ As explained below in Subsection III(B), even if Petitioner’s argument were found to have any merit, its reliance on these exhibits suffers from other flaws.

F. Supp. 2d 713, 738 (E.D. Va. 2014) (alleged prior art was only allegedly accessible after paying \$10,000 membership fee), *rev'd on other grounds*, 614 Fed App'x 503 (Fed. Cir. 2015); *Halliburton Energy Servs., Inc. v. Dynamic 3D Geosolutions LLC*, IPR2014-01186, Paper 13 at 36 (PTAB Jan. 12, 2015) (denying institution of ground where “large licensing fees effectively obscured any path” to the alleged prior art). As such, the **cost** of even obtaining a **P-20h device** (and, purportedly, the accompanying manuals) suggests that interested members of the public would not have been able to access the *Tencor Manual* exercising reasonable diligence.

Third, just like in the *VMAC Global Technologies* case mentioned above, the *Tencor Manual* includes an express statement that the manual may not “be reproduced, transmitted, transcribed, stored in retrieval system or translated into any human or computer language, in any form or by any means ... without the express written permission of Tencor Instruments[.]” Ex. 1005 at 2. This “express limitation on the use and dissemination” of the *Tencor Manual* is a clear indication that the manual was not publicly accessible. *Microsoft Corp. v. Corel Software LLC*, IPR2016-01083, Paper 14 at 13-14 (PTAB Dec. 1, 2016) (“[T]he evidence suggests that if [it] was distributed at all, it was only in a restricted and limited fashion to persons who acquired the underlying[] software product.”); *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1333-34 (Fed. Cir. 2009) (“We have

held that where a distribution is made to a limited number of entities, a binding agreement of confidentiality may defeat a finding of public accessibility. But we have also held that such a binding legal obligation is not essential. We have noted that where professional and behavioral norms entitle a party to a reasonable expectation that information will not be copied or further distributed, we are more reluctant to find something a printed publication.”) (internal citations omitted).

Furthermore, as noted above, an interested member of the general public would have had to pay at least \$65,000 to obtain a P-20h surface profiler. Such prohibitively high costs, combined with the express statement in the *Tencor Manual* that redistribution and reproduction was not permitted, show that the *Tencor Manual* would have been “effectively inaccessible to the general members of the interested public.” *Virginia Innovation Scis.*, 983 F. Supp. 2d at 738. The Board has denied institution in similar circumstances to those presented here where the “the proprietary notice” on the *Tencor Manual* “coalesces with the price restriction **to restrict accessibility to those with resources to pay the price.**” See *Haliburton Energy Servs. v. Dynamic 3D Geosolutions LLC*, IPR2014-01186, Paper 18 at 6-7 (PTAB Feb. 18, 2015) (on rehearing, held that finding of non-accessibility was proper “given the much larger price point here as compared to that in *Virginia Innovation Sciences*”) (emphasis added).

In light of the above, even accepting the authenticity and accuracy of

Petitioner's purported evidence for the purposes of the Board's decision on institution, Petitioner has not, and indeed cannot, show that the *Tencor Manual* it has submitted as Exhibit 1005 was publicly accessible to persons ordinarily skilled and interested in the art exercising reasonable diligence.

B. Petitioner's "Resold" P-20h Exhibits Do Not Support Its Assertion That The *Tencor Manual* Was Publicly Accessible

To support its assertion that the *Tencor Manual* was publicly accessible, Petitioner argues that "the P-20H [device] was available on the semiconductor equipment resale market before September 2005," and provides printed copies of webpages hosted on Internet Archive's Wayback Machine archive from two purported resale vendors of industrial equipment, "SDI" and "SPEC," to support its argument. Pet. at 20 (citing Exs. 1016 and 1018 as purported listings for the P-20H). But, as explained below, these exhibits do not support Petitioner's argument that the specific "Rev F." of the *Tencor Manual* submitted as Exhibit 1005 could have been obtained from resellers of the P-20h.

Petitioner's own exhibit shows that both of the devices that Petitioner alleges were available from SDI, and could potentially have been provided along with a copy of Exhibit 1005, were manufactured by KLA-Tencor in 1995. But 1995 is **before** the alleged publication date of the *Tencor Manual* in 1996, making it physically impossible to have been shipped with these resold products. In

particular, as shown below, the two P-20h devices in SDI listing both state that they were of “VINTAGE” “Jan 1995.” *See* Ex. 1016 at 1, 23. In other words, when they were purportedly originally sold by KLA Tencor in 1995, Exhibit 1005 (which Petitioner alleges was published a 1996⁴) had not even been created:

4859	KLA-Tencor	P20 H	SURFACE PROFILOMETER 1	200 MM	Jan 1995	as is where is	immediately 65,000 USD
4860	KLA-Tencor	P20 H	SURFACE PROFILOMETER 1	200 MM	Jan 1995	as is where is	immediately 70,000 USD

Ex. 1016 at 23 (highlighting added). Accordingly, even assuming the truth of Petitioner’s allegations regarding the publication date of the *Tencor Manual* and the original date that the P-20h surface profiler was sold, the *Tencor Manual* could not have been originally shipped with either of the P-20h devices listed in Exhibit 1016.

Nor has Petitioner established that any P-20h device sold by SPEC would have been sold along with a copy of the specific “Rev. F” of the *Tencor Manual*. *See* Pet. at 20; Exs. 1019 & 1020. None of Petitioner’s alleged Wayback Machine snapshots give any indication of the date on which the P-20h surface profilers advertised on SPEC were **originally sold** by KLA-Tencor, or its predecessor-in-interest. *See* Ex. 1019 at 3-4; Ex. 1020 (neither listing the date of original sale or otherwise indicating a date). It is Petitioner’s burden to show that these products

⁴ *See* Pet. at 19.

were shipped along with a copy of the *Tencor Manual* submitted as Exhibit 1005—and Petitioner cannot do so with these webpages, even setting aside their authenticity and accuracy.⁵

As such, Petitioner’s arguments relying on purported resellers of the P-20h surface profiler should be disregarded, as they do not explain how the specific “Rev. F” of the *Tencor Manual* was publicly accessible.

C. Petitioner’s Dissertation and Journal Article Do Not Support Its Assertion That The *Tencor Manual* Was Publicly Accessible

Petitioner contends that because a P-20h surface profiler was referenced in a dissertation written in 2005 and a journal article published in 2001, that the *Tencor Manual* submitted as Exhibit 1005 was publicly accessible before September 26, 2005. Pet. at 20-21. Petitioner is again mistaken.

First, Petitioner argues that “in 2005, a Ph.D. dissertation directly referenced [the *Tencor Manual*].” Pet. at 20; Ex. 1024.⁶ This is patently false. Instead, the dissertation references a *completely different* P-20h manual, which Petitioner has

⁵ The authenticity of these documents is addressed in more detail in Subsection III(D), *infra*.

⁶ Petitioner has not submitted any accompanying declaration from a person with personal knowledge of the dissertation’s accessibility, leaving it unauthenticated.

not submitted or otherwise relied on.⁷ *See* Ex. 1024 at 191 (citing the P-20h “**Re[f]erence Manual**”); *id.* at 99 (citing “Tencor, P-2-h [*sic*] Long Scan Profiler **Reference Manual**”). As discussed above, the Operations Manual (the *Tencor Manual*) relied upon by Petitioner identifies at least two other, separate manuals for the P-20h surface profiler: an Interface Manual and a Reference Manual. *See* Ex. 1005 at 12. As is clearly stated in the dissertation, it was the Reference Manual, and not the Operations Manual, that was “directly referenced.” Pet. at 20; Ex. 1024 at 99, 191. As such, Petitioner’s misleading arguments regarding the dissertation are false and should be disregarded.

Second, the journal article identified by Petitioner fares no better, as it only discusses the **product** and not any **manual**. It also makes no mention of when KLA-Tencor offered the P-20h surface profiler for sale, sold it, or shipped it, let alone whether KLA-Tencor sold and shipped the device along with the specific “Rev. F” of the *Tencor Manual*. Pet. 20; Ex. 1023. Nor does Petitioner allege that the *Tencor Manual* is listed or mentioned anywhere in the article. *See* Pet. 20-21.

In sum, neither the dissertation nor the journal article submitted by Petitioner

⁷ Despite Petitioner’s assertion that the dissertation was published in 2005, NCSU’s library records confirm it was published in 2006, after the priority date of the ’396 patent. *See* Ex. 1024 at 199 (“2006-02-09”).

corroborate Petitioner's assertion that the *Tencor Manual* submitted as Exhibit 1005 was publicly accessible.

D. Petitioner Has Made Little Or No Attempt To Authenticate Its Allegedly “Archived” Webpages

The remainder of Petitioner's non-testimonial exhibits proffered to show that the *Tencor Manual* was publicly available also suffer from irreparable evidentiary and logical flaws. As noted above, Petitioner presents screenshots that purport to be printouts of webpages from the Internet Archive's Wayback Machine archive. *See* Pet. at 19-21; Exs. 1015-1022. Petitioner, however, has made no credible effort to authenticate that the purported underlying webpages were publicly accessible during the relevant timeframe. For example, Petitioner (1) fails to provide an executed declaration from the Internet Archive, (2) fails to provide any evidence of personal knowledge about the webpages being available in the relevant timeframe, and (3) fails to identify any other credible indicia of authenticity. *Specht v. Google Inc.*, 747 F.3d 929, 933 (7th Cir. 2014) (excluding Wayback Machine printouts that were not “authentica[ed] by someone with personal knowledge of reliability of the archive service from which the screenshots were retrieved.”); *Standard Innovation Corp. v. Lelo, Inc.*, IPR2014-00148, Paper 41 at 21 (PTAB Apr. 23, 2015) (“Petitioner has not provided the testimony of any witness with personal knowledge of the information on the website or the

associated printout, and for that reason Exhibit 1002 has not been properly authenticated.”).

Unbelievably, Petitioner even fails to provide a signed declaration from the Wayback Machine regarding the purported webpages that they rely on. Instead, Petitioner includes a template of a sample declaration that an Internet Archive employee might sign if the employee were to—theoretically—confirm the webpage archival dates. *See* Ex. 1014 (**unexecuted** declaration not mentioning any of Petitioner’s purported archived webpages). The declaration Petitioner has submitted is from its own counsel, and only explains how the printouts were generated by in the process of drafting the Petition. *See* Pet. at 20. But Petitioner’s counsel has no personal knowledge, nor does she state that the purported webpage printouts are a true and correct copy of any actual web pages displayed on any date other than the one on which she visited the webpage, or that such webpages were publicly accessible at the relevant time. *See generally* Ex. 1013. Rather, Petitioner’s counsel merely states that the filed Exhibits are “true and correct cop[ies] of the printed file[s]” as she found them in 2018. *See id.* ¶¶ 2, 6-14. This testimony adds nothing, and in no way evidences what was available to a PHOSITA before September 26, 2005. *See, e.g. Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“[T]he expedited nature of IPRs bring with it an obligation for petitioners to make their case in their

petition to institute.”).

IV. THE PETITION RELIES ON NON-ANALOGOUS ART

As a first step in the obviousness analysis, the Board must determine whether the references relied on are “analogous” to the challenged patent. *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011) (“A reference qualifies as prior art for an obviousness determination under § 103 only when it is analogous to the claimed invention.”). As such, for the reasons provided below, the Board should deny institution here because at least two of the references relied on by Petitioner are **non-analogous art** to the ’396 patent: the *Tencor Manual* and *Rusnica*. See e.g., *Vizio, Inc. v. Nichia Corp.*, IPR2017-00558, Paper 9 at 12-17 (PTAB July 7, 2017) (denying institution where the petitioner’s grounds of unpatentability relied on non-analogous art); *Holt’s Cigar Holdings, Inc. v. Boveda Inc.*, IPR2015-01844, Paper 7 at 8-10, 12-14 (PTAB Mar. 9, 2016) (same).

There are two criteria that are considered to determine whether prior art is analogous: “(1) whether the art is from the **same field of endeavor**, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is **reasonably pertinent to the particular problem** with which the inventor is involved.” *In re Clay*, 966 F.2d 656, 658-59 (Fed. Cir. 1992) (emphasis added). Ostensibly applying one or another of these criteria in turn, the Petition alleges that: (1) the *Tencor Manual* is

analogous art because it shares a field of endeavor with the '396 patent, and (2) the *Rusnica* patent is analogous art because it addresses problems that would have been pertinent to problems implicated in the '396 patent. *See* Pet. at 21. As explained below, Petitioner is wrong on both counts.

A. The '396 Patent's Field Of Endeavor Does Not Include General Purpose Surface Profilers Like KLA-Tencor's P-20h Long Scanner

Petitioner defines the relevant field of endeavor for the '396 patent as “relating to ‘a **substrate processing apparatus for processing substrates of semiconductor devices** and the like.’” Pet. at 21 (quoting Ex. 1001, 1:5-7) (emphasis added). In particular, Petitioner asserts that both “Kang and Tencor relate to apparatuses for **processing substrates of semiconductor devices.**” *Id.* (emphasis added). As support for this statement, Petitioner relies on a single paragraph of testimony from its expert, Dr. Alexander Glew. *See id.* (citing Ex. 1003).⁸ This paragraph of testimony, however, merely (1) parrots the attorney argument from the Petition, and (2) makes the bare statement that “Tencor relates

⁸ While the Petition cites to paragraphs 14-25 of Dr. Glew's testimony to support this assertion, only paragraph 15 is relevant, as paragraph 14 is a general statement regarding the two-prong test for analogousness, and none of paragraphs 16-25 refer to the *Tencor Manual*. *See* Pet. at 21, and Ex. 1003, ¶¶ 14, 16-25.

to a semiconductor **metrology** apparatus” without citing to any evidence or explaining why this means that the *Tencor Manual* is analogous art to a substrate **processing** apparatus:

Kang (Ex. 1006) and [the *Tencor Manual*] (Ex. 1005) are from the same field of endeavor as the claimed inventions because these references relate to semiconductor processing apparatuses for processing apparatuses for processing substrates of semiconductor devices. *Kang* relates to a semiconductor wafer burn-in system and [the ***Tencor Manual***] **relates to a semiconductor metrology apparatus.**

Ex. 1003, ¶ 15 (emphasis added). But the *Tencor Manual* does not share a field of endeavor with the '396 patent for at least three reasons.

First, given that Dr. Glew has not provided evidentiary support for his opinion, the Board should accord it no weight. 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *see also In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (a lack of objective support for an expert opinion “may render the testimony of little probative value in a validity determination”); *Perreira v. Dep’t of Health & Human Servs.*, 33 F.3d

1375, 1377 n.6 (Fed. Cir. 1994) (“An expert opinion is no better than the soundness of the reasons supporting it.”).

Second, it is unclear why Dr. Glew is of the opinion that the Tencor P-20h surface profiler should be classified as “a **semiconductor** metrology apparatus,” given that Petitioner’s proffered *Tencor Manual* only references **semiconductors** once in all of its more than 300 pages. Ex. 1005 at 13 (emphasis added); *see also id. generally*.⁹ That solitary reference in the *Tencor Manual* to the word “semiconductor” is part of a list of “a variety of materials” that the P-20h” could be used to scan. *Id.* (“The Tencor P-20h Long Scan Profiler is a computerized, highly sensitive surface profiler that measures roughness, waviness, step height, and other surface characteristics **in a variety of applications.**”) (emphasis added). And even in this one instance where the word “semiconductor” is used, “[s]emiconductor wafers” are only a single example in a list of materials that also includes “[c]eramics for micro-electronics,” “[g]lass for flat panel displays,” and “[o]ptical surfaces.” *See id.* As such, the Tencor P-20h Long Scan Profiler is hardly a **semiconductor** apparatus.

Moreover, just because the P-20h surface profiler can be used in the same

⁹ The word “semiconductor” also appears twice in the glossary as part of an industry standard’s acronym. Ex. 1005 at 253.

general industry as semiconductor processing devices does not make the *Tencor Manual* analogous art to the '396 patent. *In re Clay*, 966 F.2d at 659 (holding that a reference “cannot be considered to be within [the invention’s] field of endeavor merely because both relate to the [same] industry”); *In re Natural Alternatives, LLC*, 659 Fed. App’x 608, 614 (Fed. Cir. 2016) (that two patents were “in the same general field, namely, the transportation industry” did not mean they were analogous); *see also Circuit Check Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335-36 (Fed. Cir. 2015) (“[E]ven though an inventor may work in an office with engraved signage, the inventor would not necessarily have considered using the techniques disclosed in engraved signage to solve the problem of marking circuit board tester interface plates.”).

Third, the word “metrology” (as used in the Petitioner’s description of the P-20h surface profiler) refers to the scientific study of measurement, so it follows logically that a “metrology apparatus” is a device for measurement. *See* Ex. 2001 (McGraw Hill Dictionary of Scientific and Technical Terms, 6th Ed. (2003)) (defining “metrology” as “[t]he science of measurement”). By no stretch of the imagination is **measuring** the same as **processing**. *See* Pet. at 21 (Petitioner’s definition of the field of endeavor is art “relating to ‘a substrate **processing apparatus for processing** substrates of semiconductor devices and the like.’”) (quoting Ex. 1001, 1:5-7).

This straightforward fact is confirmed by the '396 patent itself. In particular, the '396 patent's specification teaches that the phrase "substrate processing" refers to a cycle by which substrates are acted upon, for example through vapor deposition processing methods, for the purpose of growing films onto the substrates, and that the "substrate processing" performed by the apparatus occurs within a "processing furnace 202." *See, e.g.*, Ex. 1001, 7:17-18 ("processing is performed on the wafers 200 in the processing furnace 202"); *see also id.*, 18:38-41 (processing methods relevant to the invention include, *e.g.*, "processings such as CVD, PVD, processings for forming oxide film and nitride film, and processings for forming film containing metal"); *see also* Section II, *supra* (Background of the '396 Patent). As such, the Tencor P-20h surface profiler for measuring surfaces is simply not an "apparatus ... for processing substrates of semiconductor devices." *See* Pet. at 21. Accordingly, a manual for the P-20h surface profiler, such as the *Tencor Manual*, is not analogous art to an apparatus for processing semiconductor substrates.

As noted above, Petitioner only argues that the *Tencor Manual* is analogous art under the first prong of the test for analogous art; Petitioner has not alleged that the manual addresses problems that are reasonably pertinent to those addressed in the '396 patent. *See* Pet. at 21. *Holt's Cigar Holdings*, IPR2015-01844, Paper 7 at 13 ("Without any evidence or argument explaining why [a reference would have

been reasonably pertinent] we are not persuaded that a person of ordinary skill in the art would have looked to [that reference.]”). Because Petitioner has not, and indeed cannot, provide any evidence that the *Tencor Manual* relates to or describes a “substrate processing apparatus”—which Petitioner asserts is the ’396 patent’s field of endeavor—Petitioner has not shown that it is analogous art to the ’396 patent. Because all of Petitioner’s grounds of unpatentability depend on using this manual to allege unpatentability under §103, this deficiency is fatal to the Petition and the Board should not institute trial.

B. The Power Plant Control Room Problems Addressed By *Rusnica* Are Not Pertinent To The Problems Solved By The ’396 Patent

Rusnica relates to the field of nuclear power production, specifically improvements over the conventional system operations display for the control room of “a pressurized water reactor electrical power generating plant.” Ex. 1007, 4:22-24 (“This represents a departure from the traditional approach taken in control room design, in which the controls and information sources are integrated in a single model of the plant and generally organized to mimic the physical layout of the plant.”). Petitioner tacitly concedes that *Rusnica* does not share a field of endeavor with the ’396 patent and proceeds straight to the second prong of the test for analogous art: **whether the art is reasonably pertinent**, despite not sharing a field of endeavor with the ’396 patent. *See* Pet. at 21 (“*Rusnica* and Eryurek are

analogous art at least because they would have logically commended themselves to an inventor's attention when considering problems such as handling error conditions in manufacturing processes.”).

The Federal Circuit instructs that “the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve.” *In re Clay*, 966 F.2d at 659. But Petitioner and its expert gloss over the actual problems described in the specifications of the '396 patent and *Rusnica*. Instead, Dr. Glew testifies that “[b]ecause both the '396 patent and *Rusnica* seek to present information in an easily understandable way,” *Rusnica* is reasonably pertinent to the problems addressed by the '396 patent. Ex. 1003, ¶¶ 18-19 (emphasis added). But the evidence submitted by Petitioner makes clear that the actual problems addressed by Ms. Rusnica and her co-inventors in the nuclear power generation field had nothing to do with the problems in the semiconductor manufacturing field that confronted Mr. Ilda and his colleagues when they arrived at the invention claimed in the '396 patent.

The '396 patent describes a problem associated with the signal indicators “widely used” in “substrate processing apparatuses” of the type described in the patent:

[T]here is a demand for enhancement of buzzer function since the

operation conditions of the signal indicator have become complicated. Particularly, in a large-scale factory or the like where **plural substrate processing apparatuses** are installed, there is a demand for a signal indicator capable of recognizing each of [the] running states of the **substrate processing apparatuses** on a real-time basis.

Ex. 1001, 1:11-13, 1:21-30 (emphasis added). As such, in response to the “problem that it is difficult to recognize ... which one of the operation conditions” is “being displayed on the signal indicator,” the ’396 patent discloses “a **substrate processing apparatus** that solves the above-described problem.” *Id.* (emphasis added); *see also id.*, 1:42-50, 2:20-25 (“[a]ccording to this invention, even in the case where the signal indicator operates under the plural conditions, it is possible to display under which one/ones of the operation conditions the signal indicator operates, thereby informing a **running state of the substrate processing apparatus** without fail”) (emphasis added).

By contrast, the specification of *Rusnica* makes clear that “[t]he preferred embodiment of [*Rusnica*’s] invention is applied to an information display system of a control room for a pressurized water reactor **electrical power generating plant**,” with its own attendant problems. Ex. 1007, 4:22-30 (“This represents a departure from the traditional approach taken in control room design, in which the controls and information sources are integrated in a single model of the plant and generally organized to mimic the physical layout of the plant.”). For example,

Rusnica further states that “the two principal goals of plant operation” are “Generating Electricity” and “Preventing Release of Radiation,” and the display and user interface described therein are calibrated carefully to assist operators in monitoring the actualization of and balance between those goals. *Id.*, 4:41-5:37. Because *Rusnica*’s teachings regarding control room operation in nuclear power plants diverge substantially from the problems presented in the ’396 patent, a PHOSITA at the time of invention faced with semiconductor processing problems would not have had any reason to consider *Rusnica*. *In re Clay*, 956 F.2d at 660 (art was non-analogous because it was “not structurally similar to, d[id] not operate under the same temperature and pressure as, and d[id] not function like” the invention).

To the contrary, the problems presented in the nuclear control room described in *Rusnica* are “far removed from the problems associated with” substrate processing. *See Tinnus Ents., LLC v. Telebrands Corp.*, 846 F.3d 1190, 1207 (Fed. Cir. 2017). Thus, because *Rusnica* “is directed to a different purpose” than the problem addressed by the inventors of the ’396 patent, “the inventor[s] would accordingly have had less motivation or occasion to consider it,” and *Rusnica* is simply not analogous art to the ’396 patent. *In re Clay*, 966 F.2d at 659.

In short, Petitioner has submitted no evidence showing that *Rusnica* is reasonably pertinent to the semiconductor substrate processing problems faced by

the inventors of the '396 patent. For this reason alone, the Board should deny institution, as this deficiency applies to all but two of the ten challenged claims (claims 9 and 10), and instituting review where only two of the challenged claims at best can be challenged meritoriously is not an efficient use of resources. *See e.g., Chevron Oronite Co. LLC v. Infineum USA L.P.*, IPR2018-00923, Paper 9 (PTAB Nov. 7, 2018) (informative); *Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 (PTAB Jan. 24, 2019) (informative).

V. CONCLUSION

For the foregoing reasons, *i.e.*, because Petitioner has failed to meet its burden for all of the challenged claims, Patent Owner respectfully requests that the Board exercise its discretion and deny institution of the Petition.

Dated: April 9, 2019

Respectfully Submitted,

/Dion M. Bregman/
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CERTIFICATION OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response includes 6,386 words, as counted by Microsoft Word, and is therefore in compliance with the 14,000 word limit established by 37 C.F.R. § 42.24(b)(1). Accordingly, pursuant to 37 C.F.R. § 42.24(d), lead counsel for Patent Owner hereby certifies that this paper complies with the type-volume limits established for a patent owner preliminary response to petition.

Dated: April 9, 2019

Respectfully Submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), a complete copy of this PATENT OWNER'S PRELIMINARY RESPONSE and its supporting exhibits were provided via email to Petitioner by serving the counsel of record through the email correspondence addresses of record as follows:

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