

No. 18-1768

**United States Court Of Appeals
for the Federal Circuit**

POLARIS INNOVATIONS LTD.

Appellant,

v.

KINGSTON TECHNOLOGY CO., INC.,

Appellee.

APPEAL FROM THE UNITED STATES PATENT AND TRADEMARK OFFICE, PATENT TRIAL AND
APPEAL BOARD IN INTER PARTES REVIEW NO. IPR2016-01621

**KINGSTON TECHNOLOGY CO., INC.'S
RESPONSE BRIEF**

Craig E. Countryman
Fish & Richardson P.C.
12390 El Camino Real
San Diego, CA 92130
(858) 678-5070

David M. Hoffman
Fish & Richardson P.C.
111 Congress Ave.
Suite 810
Austin, TX 78701
(512) 472-5070

Michael J. Ballanco
Fish & Richardson P.C.
1000 Maine Ave., SW
Suite 1000
Washington, DC 20024
(202) 783-5070

April 15, 2019

AMENDED CERTIFICATE OF INTEREST

Counsel for Appellee certifies the following:

1. The full name of every party represented by me is: Kingston Technology Company, Inc.
2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is: None
3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party represented by me are: Kingston Technology Corporation
4. The names of all law firms and the partners and associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear for the party in this Court **(and who have not or will not enter an appearance in this case)** are: Fish & Richardson P.C.: Kenneth Hoover and Elizabeth Ranks; Law Offices of S.J. Christine Yang: Christine Yang and Martha Hopkins.
5. The title and number of any case known to counsel to be pending in this or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal: *Polaris Innovations Limited v. Kingston Technology Co., Inc.*, 8:16-cv-00300 (C.D. Cal.).

Dated: April 15, 2019

/s/ Michael J. Ballanco
Michael J. Ballanco

TABLE OF CONTENTS

	Page
AMENDED CERTIFICATE OF INTEREST.....	i
STATEMENT OF RELATED CASES.....	x
STATEMENT OF JURISDICTION.....	xi
STATEMENT OF THE ISSUES.....	xii
INTRODUCTION.....	1
STATEMENT OF THE FACTS.....	2
I. The '057 Patent: External Refresh of Memory Module According to Its Temperature.....	2
II. The Prior Art: Temperature-Based Refreshing, Offloading to External Circuitry, and Diodes Were All Well-Known.....	4
A. Atkinson Refreshes Memory Modules in Relation to Their Temperature.....	4
B. Broadwater Prevents Thermal Stress Using External Circuitry.....	5
C. Miller Uses a Forward-Biased Diode to Sense Temperature.....	6
III. The Proceedings Below: The Board Rejects All Claims as Unpatentable.....	6
SUMMARY OF THE ARGUMENT.....	8
STANDARD OF REVIEW.....	10
ARGUMENT.....	11
I. The Board Correctly Found that Atkinson Discloses a “Signal Indicative of a Temperature of the DRAM Array”.....	11

TABLE OF CONTENTS (continued)

	Page
A. Polaris’s Claim Construction Argument Is Waived.....	11
B. The Board’s Application of Atkinson to the Temperature Signal Limitation is Supported by Substantial Evidence.....	14
II. The Board Correctly Invalidated the Non-Diode Claims Based on Atkinson and Broadwater.	18
A. Substantial Evidence Supports Combining Atkinson with Broadwater To Prevent Overheating.....	18
B. Substantial Evidence Supports Combining Atkinson with Broadwater To Save Power While Reducing Thermal Stress	22
III. The Board Correctly Invalidated the Diode Claims Based on Atkinson, Broadwater, and Miller.....	23
A. The Board Properly Instituted Review Based on the Combination of Atkinson, Broadwater, and Miller	24
B. Substantial Evidence Supports the Board’s Obviousness Finding.....	32
IV. Secondary Considerations Do Not Save the Claims for Obviousness.....	34
V. If this Court Sets Aside Any Aspect of the Board’s Decision, It Should Remand for Consideration of Non-Instituted Grounds.	38
VI. There Is No Appointments-Clause Defect with Patent Trial and Appeal Board Members	40
A. Administrative Patent Judges Are Inferior, Not Principal, Officers	41
CONCLUSION	49

CERTIFICATE OF SERVICE AND FILING

TABLE OF CONTENTS (continued)

Page

CERTIFICATE OF COMPLIANCE

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Adidas AG v. Nike, Inc.</i> , 894 F.3d 1256 (Fed. Cir. 2018)	39
<i>Anacor Pharm., Inc. v. Iancu</i> , 889 F.3d 1372 (Fed. Cir. 2018)	27, 31, 32
<i>Apple Inc. v. Samsung Elecs. Co.</i> , 839 F.3d 1034 (Fed. Cir. 2016)	10
<i>Buckley v. Valeo</i> , 424 U.S. 1 (1976)	40
<i>ClassCo, Inc. v. Apple, Inc.</i> , 838 F.3d 1214 (Fed. Cir. 2016)	38
<i>Constant v. Advanced Micro-Devices, Inc.</i> , 848 F.2d 1560 (Fed. Cir. 1988)	36
<i>Cuoꝛꝛo Speed Techs., LLC v. Lee</i> , 136 S. Ct. 2131 (2016)	10
<i>Dell Inc. v. Acceleron, LLC</i> , 884 F.3d 1364 (Fed. Cir. 2018)	13
<i>Droplets, Inc. v. E*Trade Bank</i> , 887 F.3d 1309 (Fed. Cir. 2018)	39
<i>Edmond v. United States</i> , 520 U.S. 651 (1997)	41, 46, 48, 49
<i>In re Ethicon, Inc.</i> , 844 F.3d 1344 (Fed. Cir. 2017)	37
<i>Free Enter. Fund v. Pub. Co. Accounting Oversight Bd.</i> , 561 U.S. 477 (2010)	47
<i>Freytag v. Comm’r</i> , 501 U.S. 868 (1991)	40

TABLE OF AUTHORITIES (continued)

	Page(s)
<i>In re Gartside</i> , 203 F.3d 1305 (Fed. Cir. 2000)	10
<i>Google Inc. v. SimpleAir, Inc.</i> , 682 F. App'x 900 (Fed. Cir. 2017)	13
<i>Harmonic Inc. v. Avid Tech., Inc.</i> , 815 F.3d 1356 (Fed. Cir. 2016)	44
<i>In re Harris</i> , 409 F.3d 1339 (Fed. Cir. 2005)	37
<i>HTC Corp. et al v. Elec. Scripting Prods., Inc.</i> , IPR2018-01031	43
<i>HTC Corp. v. Cellular Commc'ns Equip., LLC</i> , 877 F.3d 1361 (Fed. Cir. 2017)	14
<i>Jang v. Bos. Sci. Corp.</i> , 872 F.3d 1275 (Fed. Cir. 2017)	39
<i>Jazz Pharm., Inc. v. Amneal Pharm., LLC</i> , 895 F.3d 1347 (Fed. Cir. 2018)	10
<i>In re Kabn</i> , 441 F.3d 977 (Fed. Cir. 2006)	36
<i>Lazare Kaplan Int'l, Inc. v. Photoscribe Techs., Inc.</i> , 628 F.3d 1359 (Fed. Cir. 2010)	10
<i>In re Leithem</i> , 661 F.3d 1316 (Fed. Cir. 2011)	28
<i>Lite-On Tech. Corp. v. Darfon Elecs. Corp.</i> , IPR2018-01062	43
<i>Long v. Soc. Sec. Admin.</i> , 635 F.3d 526 (Fed. Cir. 2011)	48
<i>Lucia v. S.E.C.</i> , 138 S. Ct. 2044 (2018)	40

TABLE OF AUTHORITIES (continued)

	Page(s)
<i>Masias v. Sec’y of Health & Human Servs.</i> , 634 F.3d 1283 (Fed. Cir. 2011)	46, 47
<i>MCM Portfolio LLC v. Hewlett-Packard Co.</i> , 812 F.3d 1284 (Fed. Cir. 2015)	13, 36
<i>Microsoft Corp. v. Enfish, LLC</i> , 662 F. App’x 981 (Fed. Cir. 2016)	36
<i>Morrison v. Olson</i> , 487 U.S. 654 (1988)	41, 47, 48, 49
<i>In re Mouttet</i> , 716 F. App’x 984 (Fed. Cir. 2017)	46
<i>Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal</i> , 868 F.3d 1013 (Fed. Cir. 2017)	14
<i>Nobel Biocare Servs. AG v. Intradent USA, Inc.</i> , 903 F.3d 1365 (Fed. Cir. 2018)	10
<i>In re NTP, Inc.</i> , 654 F.3d 1279 (Fed. Cir. 2011)	10
<i>In re NuVasive, Inc.</i> , 841 F.3d 966 (Fed. Cir. 2016)	29
<i>Ohio Willow Wood Co. v. Alps S., LLC</i> , 735 F.3d 1333 (Fed. Cir. 2013)	38
<i>Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC</i> , 138 S. Ct. 1365 (2018)	45
<i>PGS Geophysical AS v. Iancu</i> , 891 F.3d 1354 (Fed. Cir. 2018)	39
<i>Proppant Express Invs., LLC v. Oren Techs., LLC</i> , IPR2018-00914, Paper 38 (PTAB March 13, 2019)	44, 45
<i>Rambus Inc. v. Rea</i> , 731 F.3d 1248 (Fed. Cir. 2013)	28, 29, 37

TABLE OF AUTHORITIES (continued)

	Page(s)
<i>In re Rambus, Inc.</i> , 560 F. App'x 1005(Fed. Cir. 2014)	46
<i>SAS Institute, Inc. v. Iancu</i> , 138 S. Ct. 1348 (2018).....	7, 32, 39
<i>Sirona Dental Sys. GmbH v. Institut Straumann AG</i> , 892 F.3d 1349 (Fed. Cir. 2018).....	28, 32, 34
<i>Staub v. City of Baxley</i> , 355 U.S. 313 (1958)	28
<i>Sud-Chemie, Inc. v. Multisorb Techs., Inc.</i> , 554 F.3d 1001 (Fed. Cir. 2009).....	37
<i>Valve Corp. v. Elec. Scripting Prods., Inc.</i> , IPR2019-00062, -00063, -00064, -00065, -00074, -00084.....	43
<i>Velandier v. Garner</i> , 348 F.3d 1359 (Fed. Cir. 2003).....	20, 21, 24
<i>Wallace v. Dep't of Air Force</i> , 879 F.2d 829 (Fed. Cir. 1989).....	36
<i>In re Warsaw Orthopedic, Inc.</i> , 832 F.3d 1327 (Fed. Cir. 2016).....	18
<i>Weiss v. United States</i> , 510 U.S. 163 (1994) (Souter, J., concurring).....	49
<i>ZUP, LLC v. Nash Mfg., Inc.</i> , 896 F.3d 1365 (Fed. Cir. 2018).....	37
 Statutes	
5 U.S.C. § 3105.....	47
5 U.S.C. § 7513(a)	48
5 U.S.C. §§ 7521, 43.102(b)(6), 2102(a).....	47, 48
35 U.S.C. 102.....	26

TABLE OF AUTHORITIES (continued)

	Page(s)
35 U.S.C. § 3.....	42, 45, 48
35 U.S.C. § 6.....	42, 44, 45
35 U.S.C. § 143.....	46
35 U.S.C. § 312(a)(3)	26
35 U.S.C. § 314.....	43
35 U.S.C. § 315(c).....	44
35 U.S.C. § 316(a)	44
Vaccine Act	46
Other Authorities	
37 C.F.R. § 42 <i>et seq.</i>	44
37 C.F.R. § 42.65(a).....	37
37 C.F.R. § 42.100(b)	10
37 C.F.R. § 42.104(b)(2)	26
37 C.F.R. § 42.104(b)(5).	26
John F. Duffy, <i>Are Administrative Patent Judges Unconstitutional?</i> , 77 Geo. Wash. L. Rev. 904, 908 n.21 (2009)	45
John M. Golden, <i>Working Without Chevron: The PTO As Prime Mover</i> , 65 Duke L.J. 1657, 1682 (2016)	48
PTAB Standard Operating Procedure 2 (S.O.P.2), §§ I-II. (Rev. 10, Sept. 20, 2018)	34, 43, 44, 45
U.S. Const. art. II, § 2, cl. 2.....	40

STATEMENT OF RELATED CASES

No prior appeal from this case has been before this or any other appellate court, nor is there any other currently pending appeal from this proceeding. This Court has identified two other appeals from the Patent Trial and Appeal Board involving the same parties but different patents as related cases: *Polaris Innovations Limited v. Kingston Technology Co., Inc.*, No. 18-1831 (Fed. Cir.); *Kingston Technology Co., Inc. v. Polaris Innovations Limited*, No. 18-1778 (Fed. Cir.). There is another pending appeal from the Patent Trial and Appeal Board that has not been joined as a related case: *Polaris Innovations Limited v. Kingston Technology Co., Inc.*, No. 19-1202 (Fed. Cir.).

One stayed district court case involving the patent at issue in this appeal may be impacted by the outcome in this appeal: *Polaris Innovations Limited v. Kingston Technology Co., Inc.*, 8:16-cv-00300 (C.D. Cal.).

STATEMENT OF JURISDICTION

Kingston agrees with Polaris's jurisdictional statement, and that jurisdiction is proper.

STATEMENT OF THE ISSUES

1. Whether the Board correctly concluded that Atkinson teaches a signal indicative of temperature that, when combined with Broadwater, could be output to external circuitry.
2. Whether substantial evidence supports the Board's factual finding that a skilled artisan would be motivated to combine Atkinson and Broadwater to arrive at the claimed invention.
3. Whether the Board properly included a reference in the petition, Miller, in the proceeding, and, if so, whether substantial evidence supports the Board's factual finding that a skilled artisan would be motivated to combine Atkinson and Broadwater with Miller to arrive at the claimed invention.
4. Whether Polaris failed to properly present secondary considerations of nonobviousness to the Board, and, even if it did, whether that evidence is legally sufficient to overcome all other record evidence of obviousness.
5. Whether *SAS Institute* requires a remand if the Board's decision is set aside for the Board to address several non-instituted grounds.
6. Whether members of the Patent Trial and Appeal Board are Constitutionally appointed under the Appointments Clause of the Constitution by the Secretary of Commerce.

INTRODUCTION

Polaris asks the Court to revive its '057 patent and overturn the Board's well-reasoned and well-supported decision that all claims would have been obvious. This Court should reject that invitation. Polaris does not dispute that the primary reference the Board relied on—Atkinson—discloses what Polaris itself alleges is the '057 patent's supposed innovation: keying memory rate of refresh off of temperature readings. The few limitations not expressly disclosed by Atkinson were well-known in the circuit art, and set forth expressly in the references before the Board, making this a quintessential case of obviousness.

Faced with this close prior art, Polaris takes a kitchen-sink approach on appeal, presenting many arguments, some for the first time. None has merit. Polaris makes a waived claim construction argument that, even if successful, does not alter the Board's application of the prior art to the claims. Polaris next seeks to reweigh motivation to combine evidence despite the Board's thorough analysis supported by substantial evidence. Polaris also argues it lacked notice of a ground, even though it was included in Kingston's petition and the Board's institution decision, and even though Polaris argued it on the merits during the IPR. Polaris then raises alleged secondary considerations of nonobviousness that were not squarely presented to the Board and that, in any event, are legally insufficient. Out of options on the merits, Polaris lastly asks this Court to invalidate the entire IPR system under the Appointments Clause. The Court should reject each of these arguments and affirm the Board's decision.

STATEMENT OF THE FACTS

I. The '057 Patent: External Refresh of Memory Module According to Its Temperature

Data is stored in computer memory by applying voltage to a memory cell. (Appx598 at 1:23–46.) If voltage is applied to a portion of a cell, that portion will be read as a “1” bit. (*Id.*) When voltage is removed, it is read as a “0” bit. (*Id.*) These voltages are fleeting, so periodically the memory cell must have a “refresh” signal applied to it to reactivate the fading voltages. (*Id.* at 1:47–62.)

Polaris’s U.S. Patent No. 6,438,057 concerns refreshing the voltages of a dynamic random-access memory (DRAM) cell. (Appx592–601.) The ’057 patent centers around a straightforward premise: the frequency with which the refresh signal should be applied varies based on the temperature of the cell. (*Id.* at 2:26–36.)

Figure 2 captures this insight and shows that increasing the refresh rate at higher temperatures reduces the memory’s power consumption and improves its bandwidth.

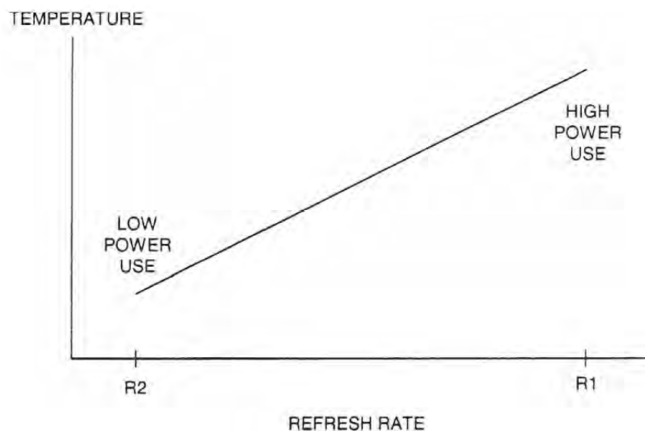


FIG. 2

(Appx594; Appx599 at 3:66–4:10).

Independent claim 1 is representative of the broadest claims (claims 1, 3, 5–9, 12, 13, and 16). These claims generically require a temperature sensor producing a temperature signal that can be output to external circuitry, although the external circuitry need not be involved with refreshing memory, and they further require that the refresh rate decreases as temperature decreases (or vice-versa):

1. An apparatus, comprising:

a semiconductor package including at least one connection pin;

at least one dynamic random access memory (DRAM) array disposed within the package; and

at least *one temperature sensor in thermal communication with the DRAM array, operable to produce a signal indicative of a temperature* of the DRAM array, and *coupled to the at least one connection pin such that the signal may be provided to external circuitry,*

wherein the DRAM array is refreshed at a rate that decreases as the temperature of the DRAM array decreases and that increases as the temperature of the DRAM array increases.

(Appx600 at 5:61–6:7 (emphases added).)

The '057 patent also includes a series of dependent “diode” claims (claims 2, 4, 10, 11, 14, 15, and 17). The diode claims further require that the temperature sensor comprise a forward-biased diode. Claim 2 is a representative diode claim:

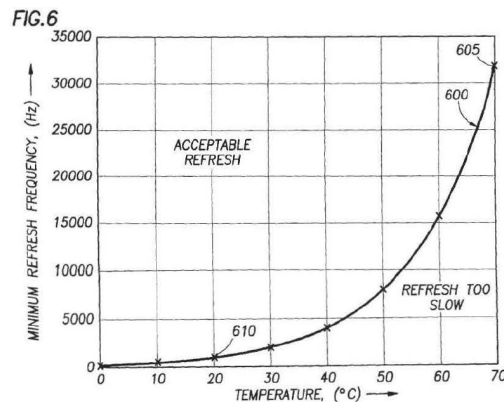
2. The apparatus of claim 1, wherein the at least one *temperature sensor includes at least one diode having a forward voltage drop* that varies as a function of the temperature of the DRAM array, and the signal corresponds to the forward voltage drop of the at least one diode.

(Appx600 at 6:8–12 (emphasis added).)

II. The Prior Art: Temperature-Based Refreshing, Offloading to External Circuitry, and Diodes Were All Well-Known

A. Atkinson Refreshes Memory Modules in Relation to Their Temperature

Setting the memory refresh rate based on temperature was not new to the '057 patent. U.S. Patent No. 6,134,167 (Atkinson) disclosed precisely that. (Appx878–902.) Like the '057 patent, Atkinson concerns itself both with power efficiency and performance, explaining that its approach “reduce[s] battery drain without incurring a substantial penalty in user time or computer resources.” (See Appx891 at 5:47–48.) Atkinson achieves that goal using “refresh logic [that] provides a periodic refresh signal having a frequency that may be varied according to the temperature of the memory device.” (*Id.* at 5:63–65.) Like the '057 patent, Atkinson’s refresh signal “continuously decreases as the memory temperature decreases and continuously increases as the memory temperature increases” and is “immediately responsive to changes in memory temperature.” (Appx892 at 7:41–45.) Atkinson’s Figure 6 confirms that its refresh rate increases with temperature (and vice-versa):



(Appx884.)

Atkinson implements those principles by disclosing an embodiment where a temperature sensor is coupled to its main memory. The sensor sends a signal representing main memory's temperature to a voltage controlled oscillator (VCO), which in turn generates a refresh signal sent to main memory based on its sensed temperature. (Appx900 at 23:5–19.) Atkinson's memory may comprise DRAM, SDRAM, extended data output DRAM, or Rambus RAM. (*Id.* at 23:32–34; Appx890 at 3:38–46; Appx893 at 9:1–5.)

Finally, Atkinson's embodiments focus on a memory cell operating in a low power, or sleep, mode, as power consumption is a focus when operating in these modes. However, the teachings of Atkinson are not limited to a low power mode, and even in low power mode, Atkinson actively refreshes its memory. (*See* Appx1291–1292.)

B. Broadwater Prevents Thermal Stress Using External Circuitry

Transmitting memory temperature signals to external circuitry was also known at the time of the '057 patent. U.S. Patent No. 4,970,497 (Broadwater) discloses a method for detecting “thermal stress” (overheating) in semiconductor chips and preventing damage from overheating. (Appx878–902.) According to Broadwater, overheating “may prevent reliable operation of [] chips.” (Appx741 at 1:25–29.) In one embodiment, Broadwater does so by bringing the memory temperature signal “out to an external terminal of the chip package” using an “external pin.” (Appx742 at 4:31–32, 49–53.) In that embodiment “[w]hen the temperature is outside the safe

operating range for the chip . . . the external device takes steps to prevent unsafe operation.” (Appx734 at Abstract.)

C. Miller Uses a Forward-Biased Diode to Sense Temperature

The use of diodes to sense temperature in circuits was a well-known technique at the time of the ’057 patent. U.S. Patent No. 3,812,717 (Miller) from the 1970s describes this approach. (Appx966–972.) Miller describes a semiconductor diode “temperature measuring apparatus.” (Appx966 at Abstract.) In this apparatus “[t]he temperature reading is made by measurement of the forward voltage drop across the diode.” (*Id.*)

III. The Proceedings Below: The Board Rejects All Claims as Unpatentable

Kingston petitioned for IPR of all claims (claims 1–17) of the ’057 patent on multiple grounds, including several based on Atkinson. (Appx45–115.) Among those grounds included a combination with Broadwater for teaching output of a temperature signal to external circuitry, Appx80–83, and a combination with Miller to teach use of a diode. (Appx71–72.)

The Board instituted review of all claims based on some combination involving Atkinson. For the broadest claims, the Board instituted on Atkinson combined with Broadwater, and for the diode claims on Atkinson, Broadwater and Miller.

(Appx199.) The Board’s institution decision clarified that although the petition did not specifically recite Miller in its summary of grounds, it was clear that Kingston was submitting Miller as a combinatory reference for the diode claims. (Appx183 & n.4.)

Acting before *SAS Institute*, the Board did not institute review on several of the petition's other grounds. (Appx198–200.)

The Board's final decision found all claims of the '057 patent unpatentable as obvious. (Appx42.) The Board found that Atkinson's disclosure of a temperature sensor that couples to main memory and outputs a voltage to Atkinson's VCO met the '057 claim limitations requiring a temperature signal. (Appx14–15.) The Board also found that a skilled artisan would have been motivated to combine Atkinson and Broadwater because doing so would enhance Atkinson's system by including protection against overheating. (Appx21–28.) The Board noted that Atkinson and Broadwater were in the same technical field, that combining them would create a system that better conserves power and protects against overheating, and that a skilled artisan would know how to do so without facing difficulty. (Appx15–16; Appx21–28.) This combination, the Board found, rendered obvious the limitation for sending the temperature signal to external circuitry. (*Id.*; Appx42.) As a result, the Atkinson and Broadwater combination rendered obvious the non-diode claims. (*Id.*)

The Board also found that combining Atkinson and Broadwater with Miller rendered obvious the diode claims. (Appx28–36.) Motivation existed for combining the references because both Atkinson and Broadwater suggested use of a diode like Miller's and because the combination amounted to a simple re-arrangement of known elements that a skilled artisan would know how to perform. (Appx32–36.) This combination of Atkinson, Broadwater, and Miller rendered obvious the diode claims.

(Appx36; Appx42.) The final decision (naturally) did not address any of the non-instituted grounds. (*See* Appx2; Appx42.) Polaris's appeal followed.

SUMMARY OF THE ARGUMENT

The Board's decision should be affirmed. Polaris did not raise before the Board the temperature signal claim construction argument it now presents on appeal, so that argument is waived. Even if Polaris succeeds with its construction, however, the Board found that Atkinson's VCO-embodiment teaches a single temperature signal that the Board relied on as satisfying the claim limitations. Substantial evidence supports this finding, even in view of Polaris's newly proposed construction.

The Board properly found a motivation to combine Atkinson and Broadwater. Broadwater teaches a method of avoiding circuit damage from overheating and Atkinson would have benefited from having that additional protection. Further, Atkinson already includes sending a temperature signal, so it would not have taken a skilled artisan undue effort to transmit that signal to external circuitry like Broadwater describes. Broadwater also would help further Atkinson's goal of maximizing power savings. Kingston submitted record evidence for all of these reasons that the Board relied on. The Board's finding of a motivation to combine is therefore supported by substantial evidence.

The Board also correctly included Miller when instituting review on the diode claims. Kingston included Miller in its petition, the Board instituted review on the exact same basis articulated in the petition, and Polaris responded on the merits.

There can be no unfairness or procedural defect given these facts. The Board properly understood Kingston as using Miller as a combinatory reference, so its decision did not change the thrust of Kingston's argument from obvious-to-try to a three-reference combination. A skilled artisan would be motivated to use Miller's diode in the Atkinson and Broadwater system because both of those references suggest using a diode, and because a skilled artisan would be able to do so easily. Substantial evidence therefore supports the Board's finding of a motivation to combine Atkinson, Broadwater, and Miller.

Secondary considerations of nonobviousness do not compel a different result. Polaris presented, at best, a handful of scattered, unsupported, and conclusory allegations going towards secondary considerations. The Board did not err by not recognizing this as a cognizable submission of secondary considerations evidence. Even still, the evidence Polaris submitted is far from what is required to make a showing that secondary considerations render a patent nonobvious, especially given Kingston's strong showing of obviousness.

Finally, there is no Constitutional deficiency with the appointment of Administrative Patent Judges to the Board by the Secretary of Commerce. Administrative Patent Judges are subject to extensive direction and control by the Patent Office's Director. They are also subject to removal. Therefore, Administrative Patent Judges are inferior—not principal—officers, and they may be appointed by a principal officer like the Secretary of Commerce.

STANDARD OF REVIEW

The Board in this *inter partes* review proceeding construed unexpired patent claims to give them their broadest reasonable interpretation. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016). Where “the intrinsic record alone determines the proper construction,” this Court “review[s] the Board’s constructions *de novo*.” *Nobel Biocare Servs. AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1380 (Fed. Cir. 2018). “Although waiver is generally a procedural issue, this court applies Federal Circuit precedent when determining whether a claim construction argument has been waived.” *Lazare Kaplan Int’l, Inc. v. Photocopy Techs., Inc.*, 628 F.3d 1359, 1376 (Fed. Cir. 2010).

Obviousness is a question of law that depends on underlying findings of fact. *See, e.g., Jazz Pharm., Inc. v. Amneal Pharm., LLC*, 895 F.3d 1347, 1362 (Fed. Cir. 2018). “What a prior art reference teaches and whether a skilled artisan would have been motivated to combine references are questions of fact.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1051 (Fed. Cir. 2016) (en banc). The Court reviews factual findings underlying obviousness for substantial evidence. *Id.* at 1355. “Substantial evidence is more than a mere scintilla. It means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000). “This court does not reweigh evidence on appeal, but rather determines whether substantial evidence supports the Board’s fact findings.” *In re NTP, Inc.*, 654 F.3d 1279, 1292 (Fed. Cir. 2011).

ARGUMENT

I. The Board Correctly Found that Atkinson Discloses a “Signal Indicative of a Temperature of the DRAM Array”

Polaris disputes (at 21–26), under the guise of claim construction, the Board’s finding that Atkinson discloses the ’057 patent claim limitations requiring:

- “at least one temperature sensor in thermal communication with the DRAM array, operable to produce *a signal indicative of a temperature* of the DRAM array”; and
- “coupled to the at least one connection pin such that *the signal* may be provided to external circuitry.”

Polaris waived any claim construction argument for these limitations by not presenting them to the Board. Regardless, even if considered, Polaris’s argument misinterprets the Board’s decision for these limitations. The Board relied on a single signal—not multiple signals—in Atkinson to satisfy the claims. Substantial evidence supports the Board’s factual determination that Atkinson discloses these limitations.

A. Polaris’s Claim Construction Argument Is Waived

Polaris’s new claim construction argument on appeal is waived, because Polaris did not timely articulate it to the Board. Kingston’s position on the now-disputed signal limitation, which the Board ultimately adopted, was consistent throughout the proceeding. (*See* Appx14–15, *citing* Appx67–68 (Petition 16–17); Appx900 (Atkinson) at 23:5–19.) In particular, Kingston identified an embodiment in Atkinson in which a temperature sensor provides the claimed temperature signal to a voltage-controlled oscillator that is connected to the main memory. (Appx67–68.) Kingston further

explained that it would be obvious to modify Atkinson based on Broadwater so that this same temperature signal was provided to external circuitry. (Appx80–83.) Yet, with Kingston’s argument before it, Polaris did not allege a claim construction dispute in its written submissions to the Board. Polaris’s preliminary patent owner response and patent owner response alleged other claim construction disputes, but not this one. (See Appx127–134; Appx229-235.) Neither did Polaris suggest this purported claim construction dispute in challenging Kingston’s application of Atkinson and Broadwater to the claims. (See Appx134–141; Appx153–156; Appx249-270; Appx1097–1118 at ¶¶ 50–98.)

It wasn’t until the oral hearing before the Board that Polaris vaguely suggested a claim construction dispute before quickly moving to another topic. (See Appx425 at 7–8 (“We do have a new claim construction argument in the reply. At least I think it’s a claim construction argument.”).) Polaris made a similar passing statement on one of its sixty-two demonstrative slides. (See Appx362.) Although Polaris alleged that Kingston’s reply prompted this purported dispute, this was wrong, because Kingston’s reply cited the same disclosure in Atkinson that Kingston cited in its petition for the temperature signal limitations. (Compare Appx67–68 (Petition) (citing Appx900 at 23:5–19; Appx692 at ¶ 47), with Appx303–304 (Reply) (citing Appx900 at 23:15–20).)

But Polaris’s fleeting reference to the issue at oral argument was insufficient to preserve it for appeal. As an initial matter, Polaris violated the Board’s regulations

and scheduling order by raising the argument the first time at the hearing. *See Dell Inc. v. Accelaron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018) (“No new evidence or arguments may be presented at the [PTAB] oral argument.”); Appx204 (scheduling order explaining that “[t]he patent owner is cautioned that any arguments for patentability not raised and fully briefed in the response will be deemed waived”). As a result, this Court has refused to find positions raised for the first time during PTAB hearings preserved on appeal:

MCM candidly admits that *it only raised this argument in a few scattered sentences at the oral hearing below*. We have found that ‘if a party fails to raise an argument before the trial court, or presents only a skeletal or undeveloped argument to the trial court, we may deem that argument waived on appeal.’ *We deem MCM’s argument waived*.

MCM Portfolio LLC v. Hewlett-Packard Co., 812 F.3d 1284, 1294 n.3 (Fed. Cir. 2015); *see also Google Inc. v. SimpleAir, Inc.*, 682 F. App’x 900, 904 (Fed. Cir. 2017) (nonprecedential) (“Google’s statements during the oral hearing . . . regarding . . . construction[] also failed to sufficiently preserve the issue for appeal.”).

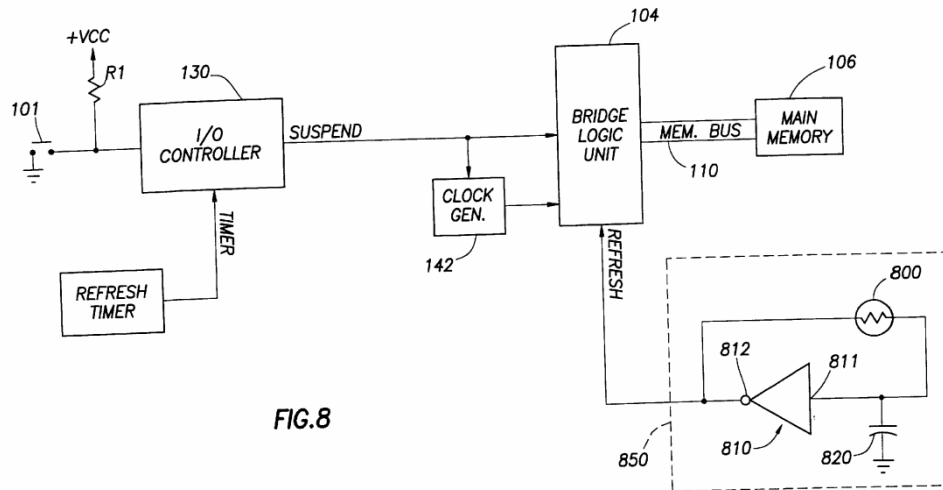
Here, Polaris’s “off-the-cuff arguments” did not “fairly place[] the PTAB on notice of [its] contrary claim construction view,” and it cannot be said that “the PTAB even recognized a true dispute existed.” *SimpleAir, Inc.*, 682 F. App’x at 904. “In such circumstances, a finding of waiver is warranted.” *Id.*

B. The Board’s Application of Atkinson to the Temperature Signal Limitation is Supported by Substantial Evidence

Even if Polaris’s argument is considered, the result does not change. The Board did not interpret the claims as supporting two separate signals to satisfy the temperature signal limitations, as Polaris avers. *See HTC Corp. v. Cellular Commc’ns Equip., LLC*, 877 F.3d 1361, 1367–68 (Fed. Cir. 2017) (rejecting implicit claim construction argument where court’s invalidity analysis did not, as alleged, exclude preferred embodiments). Rather, the Board applied the prior art to the claims in the manner proposed by Kingston, relying on a single signal in Atkinson for the temperature signal limitations. Polaris’s claim construction argument is therefore moot. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need not construe the claim . . . where the construction is not material to the obviousness dispute” and where “the result does not change.” (internal quotation mark omitted)). The real issue here is not claim construction but rather than Board’s factual findings that (1) Atkinson discloses the claimed temperature signal, and (2) a skilled artisan would modify Atkinson based on Broadwater to provide that temperature signal to external circuitry.

Substantial evidence supports the Board’s finding that Atkinson discloses the claimed temperature signal. Polaris’s expert acknowledged that Atkinson connects a temperature sensor with its main memory. (Appx1286 at 156:6–9.) In particular, Atkinson explains that, in its Figure 8 (reproduced below), the “refresh generator 850”

could be “replace[d]” with “a voltage controlled oscillator combined with a temperature sensor”:



(Appx887 at Fig. 8; Appx900 at 23:9–11.) Atkinson adds that “[i]n such a scenario, the temperature sensor couples to main memory 106, providing a voltage to the VCO that represents the main memory temperature.” (Appx900 at 23:15–17.) That voltage signal is the claimed temperature signal. (Appx14–15.) Moreover, Kingston (and the Board) relied on that same signal for the following limitation—*i.e.*, that the signal is “provided to external circuitry”—by showing that it would have been obvious to modify Atkinson to provide this voltage to external circuitry given the Broadwater reference. (Appx67–68; Appx80–83; *see also* Appx14–15, Appx17; Appx21–23)

Polaris tries to attack (23) the Board’s finding that the temperature signal is the voltage provided to the VCO by referring to a separate refresh signal that Atkinson says is produced in response to that voltage (temperature signal). In particular, Atkinson says that, “in response” to the system providing the voltage (temperature

signal) to the VCO, “the VCO produces the refresh signal at the proper frequency for refreshing main memory 106.” (Appx900 at 23:17–19.) But this refresh signal is different than what Kingston said (and the Board found) the claimed temperature signal was.

Both Kingston and the Board consistently relied on the voltage provided to the VCO as the claimed temperature signal, *not* the refresh signal that is produced in response. (Appx64–69; Appx690–693 at ¶¶ 44–49; Appx288–289; Appx292–293; Appx303–304; Appx1185 at 154:8-155:23; Appx14–15, Appx18.) In particular, the Board correctly described Kingston’s contention as being that “a temperature sensor coupled directly to main memory 106 provides a voltage to the VCO that represents the main memory temperature.” (Appx15, *citing* Appx68; Appx900 at 23:15–17; Appx887 at Fig. 8; Appx692 at ¶ 47; *see also* Appx18 (adopting Kingston’s position as Board’s).) The Board then went on to find that the subsequent limitation about providing that same temperature signal to external circuit “would have been obvious to one of ordinary skill in the art.” (Appx15.) Polaris’s arguments (at 23–26) about multiple signals and that the claimed temperature signal can’t be a refresh signal are thus all irrelevant.

Kingston never suggested, as Polaris asserts (at 26), that the temperature signal is the same as the refresh signal in Kingston’s VCO embodiment described above. For a different claim, claim 6, Kingston described a separate embodiment in Atkinson having a refresh generator in place of a VCO. (Appx302–303; Appx900 at 23:9–11.)

In that embodiment, a thermistor embedded within the refresh generator, not main memory, detects temperature, and the refresh generator creates a refresh signal. (*See* Appx899–900 at 22:39–23:4.) But that discussion has nothing to do with Kingston’s (or the Board’s) analysis of claim 1. And, immediately following its description of that embodiment, Kingston again described the VCO embodiment and identified the temperature and refresh signals as two separate things. (Appx303–304.)

Polaris interrupts its claim construction argument (at 24–25) to challenge the Board’s finding that Atkinson combined with Broadwater would teach the external circuit limitation and that a skilled artisan could achieve the combination. The Board’s findings on these points, however, are supported by substantial evidence. (*See* Appx15, *citing* Appx68; Appx692–693 at ¶¶ 47–49; Appx81; Appx742 at 4:31–33, 4:49–53; Appx705–706 at ¶¶ 83–84; *see also* Appx24–26, *citing* same, additionally Appx292–294; Appx82; Appx889 at 1:14–29; Appx706 at ¶¶ 85–86; Appx285–286; Appx1257 at 38:3–6, 40:5–25.) We discuss this evidence more fully in the next section when showing that the Board properly combined Atkinson and Broadwater.

The bottom line is that the Board did not make any claim construction error, and its factual findings that (1) Atkinson discloses the “temperature signal” limitation, and (2) it would have been obvious to modify Atkinson based on Broadwater to apply that same temperature signal to external circuitry were supported by substantial evidence.

II. The Board Correctly Invalidated the Non-Diode Claims Based on Atkinson and Broadwater.

Polaris does not contest that the combined Atkinson and Broadwater system teaches all the limitations of the '057 patent. Polaris instead argues that there would be no motivation to combine the references, based largely on its flawed premise (at 42) that Atkinson is “non-operation[all]” in its low-power mode, or that this impacts the invention as claimed. The Board considered these arguments and rejected them, explaining its basis and citing record evidence. In particular, the Board found two independent reasons the skilled artisan would combine Atkinson and Broadwater to arrive at the claimed invention: (1) incorporating Broadwater’s thermal stress technique into Atkinson would prevent overheating, Appx15, Appx21–24, Appx26–28, and (2) the combination would maximize power saving and reduce energy consumption. (Appx 15–16; Appx24–26.) The Board’s decision must stand if either reason is supported, and, here, both are. Polaris simply asks this Court to reweigh the evidence, which it cannot do on substantial evidence review. *See In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (“We may not reweigh this evidence on appeal [from the PTAB].”). The Court should reject that invitation and affirm the Board.

A. Substantial Evidence Supports Combining Atkinson with Broadwater To Prevent Overheating

The Board’s initial rationale for combining Atkinson and Broadwater—that incorporating Broadwater would prevent overheating—is well-supported. Broadwater

is directed to detecting and reducing the effects of “thermal stress” (overheating) on packaged semiconductor chips. (Appx741 at 1:5–2:8; Appx706 at ¶ 85.) Broadwater reduces overheating by using a pin for outputting a temperature signal to external circuitry. (Appx742 at 4:31–33, 4:49–53; Appx705–706 at ¶¶ 83, 84.) A skilled artisan would be motivated to incorporate Broadwater’s external pin feature into Atkinson to protect the memory from overheating, especially because Atkinson already has a temperature sensor, which would make the two references “comparatively easy” to combine. (Appx706 at ¶¶ 85, 86.) Indeed, the combination would be a “mundane task” for a skilled artisan. (Appx706–707 at ¶¶ 87–88; Appx672–677; Appx921–926; Appx927–929; Appx973–983.) And Atkinson itself envisions its use “with a variety of circuitry techniques,” as it suggests various substitutions and points to other secondary literature for that purpose. (Appx707 at ¶ 88; Appx900 at 23:25-28.)

The Board properly relied on this evidence to find that a skilled artisan would add Broadwater’s external circuitry to Atkinson to prevent overheating. In particular, the Board found that Broadwater would be applicable to “any type of chips,” including Atkinson’s refreshing circuit:

[W]e agree with Petitioner that because Broadwater’s teachings pertain to relieving any type of chips from thermal distress, the ordinarily-skilled artisan would have been apprised that such a *communication of the sensed temperature of the DRAM to the external circuitry via the external pin is a suitable addition to complement Atkinson’s refreshing circuit in relieving the DRAM from possible overheating*. Accordingly, we agree with Petitioner that *there are sufficient reasons to combine the teachings of Atkinson and Broadwater* to yield the specific invention claimed.

(Appx 24 (emphases added).) The Board’s findings must be sustained based on Kingston’s evidence, regardless of any of Polaris’s counterarguments, because, on substantial evidence review, this Court cannot reweigh evidence. *See Velandar v. Garner*, 348 F.3d 1359, 1378 (Fed. Cir. 2003) (“If the evidence will support several reasonable but contradictory conclusions, we will not find the Board’s decision unsupported by substantial evidence simply because the Board chose one conclusion over another plausible alternative.”). Nonetheless, Polaris’s counterarguments are wrong on the merits.

Polaris first disputes (at 42–44) that Atkinson’s memory overheating would concern a skilled artisan because Atkinson only operates in a “low power mode” with the system asleep. But Atkinson’s teachings are not limited to only this embodiment. Even in low power mode, the system is active and it refreshes the memory. (Appx414-415 at 10:1–11:10.) As such, Atkinson’s memory could overheat in this state. Polaris’s expert admitted to this, explaining what would happen to a laptop in sleep mode in a hot car implementing Atkinson’s teaching: “[i]t’s in sleep mode, which means the DRAM is there and refreshing; and if it the – if it is a board is implementing the Atkinson Patent as its getting hotter, th[e]n that board refresh will increase.” (Appx1291–1292 at 177:13–178:13.) The Board thus correctly found that “the laptop disclosed in Atkinson is vulnerable to overheating even in sleep mode,” which meant that “it could benefit from Broadwater’s external refresh unit,”

(Appx26), even though “the systems of Atkinson and Broadwater operate at different states.” (Appx22–23.)

Polaris next argues (at 44–45) there is no motivation to combine for overheating protection because Atkinson’s system increases temperature in situations where the heat is high. But Polaris’s argument relates to Atkinson’s refresh behavior, which is separate from the overheating protection achieved through combination with Broadwater. For this reason, the Board dismissed Polaris’s argument as “not commensurate in scope with the claim language.” (Appx22.) As the Board correctly found, the claims do not “tie the external pin to the refresh process triggered in response to being informed of the DRAM temperature” and Polaris “has not provided any basis in the claims to support the argument that Atkinson’s system cannot be modified as proposed to add an external connection pin to complement the refresh process.” (*Id.*; *see also* Appx24–25.) Substantial evidence supports this determination and it should not be disturbed.

Polaris then turns (at 45–46) to trying to explain away testimony from its expert that “we don’t want the device to blow up.” (Appx1257 at 40:5–18.) Polaris suggests that the testimony was limited to Broadwater and didn’t include Atkinson or circuits generally. But the question covered both Atkinson and Broadwater, and Polaris’s expert began his answer by acknowledging that both references deal with reliability and power consumption issues. (*Id.*) The Board, as fact-finder, was reasonably entitled to read the rest of the expert’s answer, including his statement that “we don’t

want the device to blow up” to refer to both references. Regardless, the Board’s motivation finding referenced this testimony only in passing, and the other record evidence amply supports that finding.

B. Substantial Evidence Supports Combining Atkinson with Broadwater To Save Power While Reducing Thermal Stress

Substantial evidence also supports the Board’s other independent basis for finding motivation to combine—*i.e.*, that a skilled artisan would have known that she could save power and reduce energy consumption by incorporating Broadwater’s external circuitry into Atkinson. (Appx15–16; Appx25.) Both Atkinson and Broadwater were explicitly concerned with power savings. As Kingston’s expert explained, Atkinson’s decision to tie refresh rate to temperature (as shown in its Figure 6) was intended to achieve “the greatest power savings.” (Appx693–694 at ¶ 51.) Moreover, even Polaris conceded that “Atkinson and Broadwater both teach reducing circuit activity,” (Appx257), and that “Broadwater teaches shutting part of its circuits down.” (Appx258). Polaris’s expert likewise admitted that Atkinson and Broadwater are “both concerned with power consumption because they both understand that more power mean it’s more hot.” (Appx1257 at 38:7–39:14; *see also id.* at 40:5–18.) Indeed, Broadwater’s claims include “a control means [that] operates **to stop power** to the integrated semiconductor chip.” (Appx743 at 6:22–25 (cl. 2) (emphasis added).) The Board thus naturally concluded that a skilled artisan would be motivated to combine a reference that described an improved way of conserving

power (Broadwater) with a reference that was also concerned with power savings (Atkinson), thereby providing the benefit of “maximizing power saving during self-refresh timing sequence.” (Appx25; *see also* Appx15–16.)

None of Polaris’s counterarguments (at 47–49) demonstrates a lack of substantial evidence to support the Board’s fact-finding. Polaris cites its own expert’s testimony that there would be no need to reduce power consumption in Atkinson’s low-power mode. However, conflicting evidence doesn’t undermine the evidence that supported the Board’s finding. Polaris then suggests that Atkinson’s remark that its particular embodiment was designed to be “self-contained” taught away from the combination. But the fact that a reference states its system has one benefit (*e.g.*, being self-contained) does not teach away from combining it with another reference where the combination yields another benefit (*e.g.*, power saving) that the reference also acknowledges was important. Atkinson never says not to modify its system to include external circuitry, so the Board did not err in rejecting Polaris’s teaching away argument.

III. The Board Correctly Invalidated the Diode Claims Based on Atkinson, Broadwater, and Miller

Polaris’s further challenge to the Board’s invalidation of the diode claims is largely procedural. It erroneously contends that the Board concocted a *sua sponte* ground, even though Kingston’s petition plainly laid out the combination of Atkinson, Broadwater, and Miller, and even though the Board acknowledged as much when

instituting review. The Court should thus reject Polaris's procedural challenge, along with its make-weight alternative arguments that the Board's decision lacked substantial evidence.

A. The Board Properly Instituted Review Based on the Combination of Atkinson, Broadwater, and Miller

Polaris is wrong to criticize the Board for including Miller as part of its invalidity ground for the diode claims. Kingston's petition cited Miller for those claims, and it explained why a skilled artisan would combine it with Atkinson and Broadwater. Polaris's argument boils down to a purported lack of clarity with the petition's point headings, but ignores the petition's substance. The Board correctly decided that the petition included combination with Miller and squarely put this combination at issue at institution, preventing any reasonable claim of prejudice.

1. Kingston's Petition Alleged Obviousness Based on Miller

Kingston's petition began with an exhibit list of references upon which it would rely. (Appx50–51.) The list included Miller, *id.*, and Kingston attached Miller to the petition as an exhibit. (Appx966–972.) The petition begins by explaining that “[t]he discussion below identifies each challenged claim and where the prior art teaches or suggests each portion of the claim.” (Appx62.) The sections that follow allege obviousness with Atkinson serving as a base reference. (Appx63–83.)

For claim 2, the first diode claim, the petition expressly recites Miller as a reference a skilled artisan would combine with Atkinson:

Like the '057 Patent, *Atkinson explains that “[i]t should be noted that numerous other devices and methods exist for determining the temperature of main memory 106, such as a thermocouple or temperature sensing integrated circuit.”* [Appx899] at 22:21-24; [Appx695] at ¶¶ 52, 53.

Those of ordinary skill at the time of the filing of the '057 Patent would know that *one example* of the finite alternate types of integrated circuits for detecting temperature was a *diode* having a forward voltage drop that varies as a function of temperature. [Appx695] at ¶ 53. *For example, Miller from 1974 describes a semiconductor diode “temperature measuring apparatus”* in which “[t]he temperature reading is made by measurement of the forward voltage drop across the diode.” [Appx966] at Abstract. *There is nothing inventive about using this known type of temperature sensor, and it would be obvious for a person of ordinary skill to have selected a diode.* [Appx695] at ¶ 53. Atkinson even notes that “[n]umerous variations and modifications will become apparent to those skilled in the art once the above disclosure is fully appreciated,” [Appx900] at 24:63-65,—making *the use of a well-known type of temperature sensor all the more obvious.*

(Appx71–72 (emphases added).) The petition’s obviousness argument was clear:

Atkinson teaches that alternative temperature sensing devices may be used with its invention, Miller disclosed one such well-known device (a forward voltage drop diode), and skilled artisans would have known how to combine their teachings. This argument was supported by Kingston’s expert, including in his declaration submitted with the petition. (Appx695 at ¶¶ 52–53; *see also* Appx1175 at 115:7–116:25.) Thus, Kingston presented a straightforward case of obviousness that included Miller.

The petition’s Miller combination satisfies the applicable statutory and regulatory requirements. As shown above, the petition includes “the grounds on which the challenge to each claim is based, and the evidence that supports the

grounds for the challenge to each claim,” namely Atkinson, Broadwater, and Miller, and does so for “each claim challenged,” *i.e.*, the diode claims. 35 U.S.C. § 312(a)(3). The petition cites the exact disclosure it relies on for both Atkinson and Miller, thereby showing “[t]he supporting evidence relied upon to support the challenge and the relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge.” 37 C.F.R. § 42.104(b)(5). Finally, Kingston’s petition makes clear, and Polaris has not challenged, that it bases unpatentability on obviousness, therefore identifying “[t]he specific statutory grounds under 35 U.S.C. 102 or 103 on which the challenge to the claim is based.” 37 C.F.R. § 42.104(b)(2).

2. The Board’s Use of Miller Mapped Kingston’s Petition and Did Not Form a New Ground

The Board did not err by including Miller in its unpatentability ground for the diode claims. The Board instituted review of the diode claims based on the same Atkinson, Broadwater, and Miller ground “relied upon in [Kingston’s] analysis” in the petition. (Appx183 & n.4; *see also* Appx195–199.) In particular, the Board summarized Kingston’s discussion in the petition, noting Kingston’s contentions that Atkinson discloses the use of “known temperature sensors,” that “measuring a forward voltage drop across a semiconductor diode to thereby read the temperature, as described in Miller, was a well-known use of such a type of temperature sensor,” and that “it would have been obvious to one of ordinary skill in the art to select a

diode as a well-known type of temperature sensor for reading the temperature of Atkinson’s DRAM.” (Appx196, *citing* Appx71–72.) The Board’s institution decision also noted that Polaris’s preliminary response had argued against including Miller, both procedurally and on the merits, but held that “we interpret the ground of unpatentability as including Miller,” and that “Petitioner has provided an articulated reasoning with some rational underpinning sufficient to support the legal conclusion of obviousness based on Atkinson, Broadwater, and Miller.” (Appx197–198.) The Board thus properly instituted review, noting that the ground included all three references. (Appx198–199.) And, in its final decision, the Board again properly rejected any procedural argument against including Miller, explaining that Polaris “was apprised of the Petitioner’s reliance on Miller in the Petition, and Patent Owner availed itself of the opportunity to provide arguments addressing Miller in the Patent Owner Response.” (Appx31–32, *citing* Appx270–274.)

This is not a case where the Board instituted on a theory it developed on its own. The Board applied the same theory of unpatentability (obviousness) using the same set of references (Atkinson, Broadwater, and Miller) and combined them in the same manner as proposed in the petition. That is perfectly permissible under the applicable statutes and precedent. *See, e.g., Anacor Pharm., Inc. v. Iancu*, 889 F.3d 1372, 1380 (Fed. Cir. 2018) (rejecting post-*SAS* APA challenge because “the Board’s final written decision was based on the same combination of references . . . and the same series of inferences that the petition proposed”). To vacate the Board’s decision on

the diode claims even though the substance of its analysis was the same as that in the petition would be to insist on “an arid ritual of meaningless form,” *Staub v. City of Baxley*, 355 U.S. 313, 320 (1958), that would serve no practical purpose. Polaris knew what Kingston’s theory was and responded to it, both before and after institution. Its invalid claims should not be revived on a procedural gotcha.

None of Polaris’s cited cases require the formalistic approach it advocates. For example, *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1355–56 (Fed. Cir. 2018), actually rejected the patent owner’s argument that the Board exceeded its power by relying on different prior art elements than the ones named in the petition. The court found that “[t]he Board did not change theories simply because the petition did not use the exact words” that the petition used, and held “that the Board did not deviate from the grounds in the petition by relying upon [terms not used in petition] and citing for support the same portions of [prior art reference] that the petition cited.” *Id.* at 1356. So too here, the Board relied on the exact same Miller disclosure the petition cites and used the same theory of combination, so the ground is not new. (Appx33–36.)

Polaris’s other cases fare no better. Polaris’s reliance on *In re Leithem*, 661 F.3d 1316 (Fed. Cir. 2011), is misplaced, because, there, the Court remarked that the Board adopts a “new” ground of rejection in *ex parte* prosecution when “the Board relies on new facts and rationales not previously raised to the applicant by the examiner.” *Id.* at 1319 (emphasis added). Nothing of the sort happened here. Likewise, *Rambus Inc. v.*

Rea, 731 F.3d 1248, 1256 (Fed. Cir. 2013), does not help Polaris, because, there, the Board acknowledged that an examiner’s finding underlying a motivation to combine was “erroneous” and “provid[ed] a new motivation to combine the references.” *Id.* at 1256. Here, the Board explicitly indicated at institution that it was not providing anything new but simply relying on “Petitioner’s analysis” of the diode claims. (Appx183 n.4.) And, for the same reason, the Board did not alter “the thrust of rejection” like it did in one of the two IPRs in *In re NuVasive, Inc.*, 841 F.3d 966, 972 (Fed. Cir. 2016).

With no legal support for its position, Polaris reverts (at 34–38) to trying to reinterpret the use of Miller in Kingston’s petition as being limited to a narrow obvious-to-try theory. But Polaris’s own preliminary patent owner response (submitted pre-institution) contradicts that position. Polaris first asserted that Kingston “claims that there are a ‘finite alternate types of integrated circuits for detecting temperature’ and ***so the use of any one of them is obvious.***” (Appx141–144 (emphasis added), *quoting* Appx71–72.) After arguing against that theory, Polaris then asserted: “Petitioner ***also cites Miller*** (Ex. 1015) as an example of the use of a diode to measure temperature,” while disputing that Miller was properly raised. (Appx144, *citing* Appx71–72.) In other words, Polaris understood Kingston as arguing both that it would be obvious to try any of the finite available options and “also” that it would be obvious to combine Miller. (*Id.*) The Board’s reliance on Miller at institution thus conformed with an obviousness theory Kingston presented and

Polaris acknowledged. Regardless, the Board also adopted Kingston's theory that Miller was "one example of the finite alternative types," reciting the theory and then stating in the next sentence that "[w]e agree with Petitioner." (Appx34.) So, even if the petition were limited to an "obvious-to-try" rationale, the Board's decision properly adopted that too, regardless of whether Miller was part of a formal "combination" or not.

Finally, Polaris complains (at 38) that the petition's discussion of Atkinson and Miller was not included in the same section as its combination of Atkinson and Broadwater. But the petition's combination of Atkinson and Broadwater was plainly meant to supplement all the discussion of Atkinson (and Miller) that had taken place before. (Appx80–83.) In particular, the petition had previously set forth a theory in which a skilled artisan would have known to modify Atkinson to provide the temperature signal to external circuitry based on his own background knowledge. (Appx80; *see also* Appx63–70.) The petition then explained that, if the Board did not accept this contention, then Broadwater was a reference showing that limitation that a skilled artisan would combine with Atkinson with a reasonable expectation of success. (Appx80–83.) None of that discussion retracted the petition's earlier argument that, for the diode claims, the skilled artisan would combine Atkinson and Miller. (Appx71–72.) So, when the Board instituted on the Atkinson and Broadwater combination for the broader claims, it naturally included Miller in combination with both of them for the narrower diode claims. The different references dealt with

different elements, so there was nothing incompatible with the two combinations and no other reason to think that the petition's arguments on Atkinson/Miller did not apply equally to a combination that included Broadwater.

3. Polaris Suffered No Prejudice By Miller's Inclusion

The Board did not exceed its powers by including Miller in the proceeding. Polaris was apprised of Miller's inclusion in the proceeding, which the Board made clear at institution. (Appx183 & n.4; Appx198–199.) As Polaris admits (at 15), after disputing that Miller formed a part of the petitioned-for grounds, it “submitted argument, supported by direct and cross-examination testimony and documentary evidence, rebutting the two instituted grounds on the merits.” This included substantive argument on the ground including Miller for the diode claims. (Appx270–274; Appx421 at 17:4–22; Appx434–435 at 30:1–31:17.)

Polaris therefore did not in fact suffer any prejudice or withstand an APA violation. Polaris had the opportunity throughout the entirety of the proceeding to respond to Kingston's allegations regarding combination with Miller, seized those opportunities, and lost on the merits. This Court's post-*SAS* cases hold that the opportunities Polaris had satisfy the APA. For example, in *Anacor Pharmaceutical, Inc. v. Iancu*, the patent owner argued it was “denied its procedural rights with respect to the theory of obviousness adopted by the Board” that referred to two references not cited in the petition. 889 F.3d 1372, 1380, 1382 (Fed. Cir. 2018). Because “[t]he Board did not materially deviate from the theory of obviousness set forth in the petition,” and

because the patent owner “had ample notice of and an opportunity to respond to the [newly cited] references,” the Court “reject[ed] [patent owner]’s argument that the Board violated the APA or due process by adopting a new theory of obviousness not presented in the petition.” *Id.* at 1380, 1382; *see also Sirona*, 892 F.3d at 1356 (“Because the petition provided Sirona notice and opportunity to address the portions of Bannuscher relied on by the Board, the Board’s reliance on these portions of Bannuscher did not violate the APA and is not inconsistent with *SAS*.”). The same is true here, so the Board’s reliance on the Atkinson/Broadwater/Miller ground was procedurally proper.

B. Substantial Evidence Supports the Board’s Obviousness Finding

Substantial evidence supports the motivation to combine Atkinson and Broadwater with Miller the Board found in deeming the diode claims obvious. (Appx19; Appx34–36.) Miller discloses using a forward-biased diode as a temperature sensor. (Appx966 at Abstract; Appx695 at ¶ 53.) Atkinson teaches that a skilled artisan may use temperature sensors others than the ones it recites: “[i]t should be noted that numerous other devices and methods exist for determining the temperature of main memory 106, such as a *thermocouple* or *temperature sensing integrated circuit*.” (Appx899 at 22:21-24 (emphases added); *see also* Appx695 at ¶¶ 52, 53 Appx71; Appx298.) Both of the exemplary alternative embodiments relate to Miller’s diode: (1) a thermocouple “is much like a forward-biased diode,” (Appx1292 at 180:6-10; Appx1400); and (2) a temperature sensing integrated circuit is

based on a diode. (Appx1198 at 209:15–17; Appx1171 at 98:6–22; *see also* Appx298–299.) Broadwater also identifies diodes as suitable for sensing temperature in circuits. (Appx742 at 3:55–58; *see also* Appx300.) Therefore, a skilled artisan would have been motivated to use a select a diode to use with the combined Atkinson and Broadwater device, especially given the explicit guidance in Atkinson to substitute such a device. (Appx900 at 24:63-65; Appx695 at ¶¶ 52–53; Appx71–72; Appx298–302; Appx416–418 at 12:25–14:20.) Substantial evidence supports the Board’s finding of a motivation to combine Atkinson and Broadwater with Miller.

Polaris criticizes (at 40) the Board and petition for an inadvertent typo, which referenced Miller with respect to a cooling regime rather than the Suzuki reference. But this point does not justify setting aside the Board’s decision, because the Board independently explained why the skilled artisan would combine Miller with Atkinson and Broadwater. (Appx34–35.) The Board relied on the same rationale just discussed—*i.e.*, that Atkinson “suggests using alternative temperature sensing devices not particularly listed for sensing the temperature of the DRAM,” that Miller showed one such well-known device, and that the combination “is no more than a simple arrangement of old elements with each performing the same function it had been known to perform, yielding no more than one would expect from such an arrangement.” (Appx34–35.) The Board also mentioned that the combination of all three references enabled use in a cooling regime and conserved power, but that was appropriate, given that the Board was also justifying the combination of Atkinson and

Broadwater, which did accomplish those objectives. (*Id.*; *see also* Appx18.) The Board's explanation was thus more than adequate to justify an obviousness finding under *KSR*.

Otherwise, Polaris again disputes (at 41) that a skilled artisan would seeking to improve Atkinson would be concerned with overheating or thermal stress. For the same reasons described in Sections II.A and II.B, Polaris is wrong, and substantial evidence supports the Board's contrary finding. (Appx35; Appx21–24.)

IV. Secondary Considerations Do Not Save the Claims for Obviousness

Polaris did not present a cogent set of secondary considerations of nonobviousness to the Board. Polaris's supposed evidence of long-felt need and unexpected results is, instead, a collection of scattered, one-off record statements. These statements consist largely of attorney argument or conclusory expert testimony, and most do not actually relate to long-felt need or unexpected results. None show nexus with the claimed invention. This is not the stuff of which secondary considerations are made. Polaris's secondary considerations arguments were thus forfeited or, at most, do not withstand the strong evidence of obviousness.

Polaris's brief (at 50) collects its alleged secondary considerations evidence in a single string cite. But the evidence behind these citations is underwhelming. Polaris first cites attorney argument from its patent owner response, which included only one sentence on long-felt need, Appx222, and two scattered sentences referencing unexpected results. (Appx227; Appx263.) The long-felt need allegation is supported

only by a brief citation to the '057 patent. (Appx222, *citing* Appx598 at 2:3–4.) The unexpected results allegations rely solely on three paragraphs in Polaris's expert's declaration. (Appx227, *citing* Appx1094–1096 at ¶¶ 44–45; Appx263, *citing* Appx1110–1111 at ¶ 82.) Only one of these paragraphs actually mentions unexpected results, citing no evidentiary support. (Appx1110–1111 at ¶ 82.) Polaris's other citations to its patent owner response don't actually mention or relate to secondary considerations. (*See* Appx218; Appx221; Appx226.)

Polaris's brief (at 50) next cites several other paragraphs from its expert's declaration, including one to the legal standard for secondary considerations with no application to the facts of this case, Appx1087 at ¶ 34. None of the cited paragraphs reference long-felt need. Only one references unexpected results, and it is the same unsupported paragraph cited by Polaris's patent owner response previously discussed. (*See* Appx 1088 at ¶ 35; Appx1090–1091 at ¶ 39; Appx1095–1096 at ¶ 45; Appx1110–1111 at ¶ 82.) Polaris then cites two passages from its expert's deposition, one being its expert reading an already-cited paragraph from his declaration verbatim into the record, Appx1288–1289 at 165:12–166:1, and the other simply alleging that the challenged claims are not obvious. (Appx1259 at 48:18–49:19.) Perhaps recognizing the testimony was unhelpful, Polaris also never directed the Board to it.

Finally, Polaris cites three demonstrative slides it submitted during the hearing. The Board does not treat demonstrative exhibits as substantive evidence under its current regulations. *See* Office Patent Trial Practice Guide (August 2018 Rev.), at *21,

available at <https://go.usa.gov/xU7GP> (“Demonstrative exhibits used at the final hearing are aids to oral argument and not evidence”); *see also* 83 Fed. Reg. 39,989 (Aug. 13, 2018) (adopting August 2018 Trial Practice guide).

This amalgamation of strewn attorney argument and conclusory expert testimony did not squarely present the Board with a case of secondary considerations. The Board had no obligation to scour Polaris’s submissions to piece together a secondary considerations argument. An “issue must be raised with sufficient specificity and clarity that the tribunal is aware that it must decide the issue, and in sufficient time for the agency to do so.” *Wallace v. Dep’t of Air Force*, 879 F.2d 829, 832 (Fed. Cir. 1989); *see also Microsoft Corp. v. Enfish, LLC*, 662 F. App’x 981, 987 (Fed. Cir. 2016) (nonprecedential) (citing *Wallace* in context of PTAB appeal and refusing to entertain argument not “meaningfully present[ed] to the Board”). “[S]keletal or undeveloped argument[s],” or ones made for the first time at the hearing before the Board, are waived, and Polaris has thus waived its secondary considerations defense. *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015).

Even if this Court finds that Polaris preserved a secondary considerations argument, it fails on the merits. Attorney argument is insufficient to prove secondary considerations. *See In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006) (“Our precedent requires that the applicant submit actual evidence of long-felt need, as opposed to argument.”); *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1572 (Fed. Cir. 1988) (refusing to assign weight to secondary considerations where “purported

evidence consisted only of argument and conclusory statements rather than factual evidence”). So is unsupported, conclusory expert testimony. *In re Ethicon, Inc.*, 844 F.3d 1344, 1352 (Fed. Cir. 2017) (rejecting secondary considerations arguments that “have scant support in the record” where party “relied solely on its expert’s conclusory testimony to support its copying allegations”); *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1373 (Fed. Cir. 2018) (affirming courts’ rejection of secondary considerations where patent owner “provided no evidence apart from conclusory statements made by its expert that any long-felt but unresolved need existed in the industry”); 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.”). Reliance on the statements in the patent written description also fail. *See Sud-Chemie, Inc. v. Multisorb Techs., Inc.*, 554 F.3d 1001, 1009 (Fed. Cir. 2009) (“Multisorb is correct that conclusory statements in a patent’s specification cannot constitute evidence of unexpected results in the absence of factual support.”).

Further, Polaris did not attempt showing the nexus element, instead suggesting (at 50) that there does not need to be a nexus between secondary considerations and the claims. This goes against bedrock law. *In re Harris*, 409 F.3d 1339, 1344 (Fed. Cir. 2005) (rejecting secondary considerations where Board “correctly reasoned that the showing of unexpected results is not commensurate in scope with the degree of protection sought by the claimed subject matter”); *Rambus Inc. v. Rea*, 731 F.3d 1248,

1257 (Fed. Cir. 2013) (secondary considerations must be “reasonably commensurate with the scope of the claims”).

It would therefore be futile to send this case to the Board to further address Polaris’s purported secondary considerations. Indeed, this Court has affirmed Board decisions even where it has found the Board’s secondary consideration analysis flawed. *See ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1222–23 (Fed. Cir. 2016) (affirming Board decision incorrectly assigning no weight to secondary considerations where “the value this evidence possesses in establishing nonobviousness is not strong”). In a cases, “where a claimed invention represents no more than the predictable use of prior art elements according to established functions, . . . evidence of secondary indicia are frequently deemed inadequate to establish non-obviousness.” *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1344 (Fed. Cir. 2013). Given the weakness of Polaris’s purported secondary considerations and the strength of Kingston’s obviousness showing, the Court should not disturb the Board’s decision.

V. If this Court Sets Aside Any Aspect of the Board’s Decision, It Should Remand for Consideration of Non-Instituted Grounds.

If this Court disagrees with the Board’s obviousness determination, remand is the proper remedy. In addition to the grounds already discussed, Kingston’s petition challenged all claims of the ’057 patent as obvious based on: (1) Atkinson in view of Miller; (2) Tillinghast in view of at least Broadwater and Miller; and (3) Kodama in view of at least Lee ’970 or Broadwater, and Miller. (Appx60–62; Appx84–113.) The

Board did not institute review on these grounds, Appx198–200, and did not address them in its final written decision, Appx2; Appx42, as it was required to do. *See SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348, 1354 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (explaining that *SAS* “require[s] a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”); *Adidas AG v. Nike, Inc.*, 894 F.3d 1256, 1258 (Fed. Cir. 2018) (finding “[e]qual treatment of claims and grounds for institution purposes has pervasive support in *SAS*” and remanding to address non-instituted grounds).

Kingston has not waived its ability to seek this relief despite Polaris’s suggestion (at 15 n.2) that it has. The Board deemed all challenged claims (claims 1–17) unpatentable. (Appx43.) Thus, the Board fully granted Kingston’s petitioned-for relief, and a Kingston cross-appeal on the non-instituted grounds would have been improper as it would not enlarge the judgment. *See Droplets, Inc. v. E*Trade Bank*, 887 F.3d 1309, 1322 (Fed. Cir. 2018) (“Where, as here, the Board has entered a judgment of invalidity as to all claims, there is no basis for a cross-appeal as to additional grounds for invalidity.”); *Jang v. Bos. Sci. Corp.*, 872 F.3d 1275, 1290 (Fed. Cir. 2017) (“We dismiss the cross-appeal because it does not seek to enlarge the district court’s judgment[;] . . . the cross-appeal merely offers an alternative basis to affirm the judgment.”). Kingston instead raises these additional grounds as an alternative basis for granting the relief the Board already awarded.

VI. There Is No Appointments-Clause Defect with Patent Trial and Appeal Board Members

Congress properly exercised its power when it vested appointment of members of Administrative Patent Judges in the Secretary of Commerce. “Congress may by law vest the appointment of [] inferior officers, as they think proper, . . . in the heads of departments.” U.S. Const. art. II, § 2, cl. 2. Administrative Patent Judges fall squarely within that language. They are inferior officers that are subject to significant control by the Director of the Patent Office and the Secretary of Commerce—they cannot act unless the Director assigns them cases; they cannot act in an *inter partes* review unless the Director institutes review (or delegates that task); they must follow precedential decisions designated by the Director; and they can be fired for “good cause,” which would include problems with their decisions.

Polaris is wrong to suggest that Board members have any powers that would make them a “superior officer” that would require Presidential appointment and Senate confirmation. Indeed, none of Polaris’s cited Supreme Court decisions delineating this boundary come down in its favor—each finds the officers in question to be inferior officers. *See Lucia v. S.E.C.*, 138 S. Ct. 2044, 2051 n.3 (2018); *Freytag v. Comm’r*, 501 U.S. 868, 881 (1991); *Buckley v. Valeo*, 424 U.S. 1, 126 (1976). This Court should not disrupt Congress’s permissible delegation to the Secretary here, as it does not upset the separation-of-powers balance the Appointments Clause strikes.

A. Administrative Patent Judges Are Inferior, Not Principal, Officers

“Whether one is an ‘inferior’ officer depends on whether he has a superior.” *Edmond v. United States*, 520 U.S. 651, 662 (1997). Absolute control by a superior over an inferior officer is not necessary, but instead “‘inferior officers’ are officers whose work is *directed and supervised at some level* by others who were appointed by Presidential nomination with the advice and consent of the Senate.” *Id.* at 663 (emphasis added). Even if an officer “possesses a degree of independent discretion to exercise the powers delegated to her,” other factors—particularly her removability—may weigh conclusively toward classifying her an inferior officer. *Morrison v. Olson*, 487 U.S. 654, 671 (1988).

The Supreme Court has thus held that officers that are subject to controls similar to those in place for Administrative Patent Judges are “inferior” officers that do not require Presidential appointment or Senate confirmation. *See, e.g., Edmond*, 520 U.S. at 661–66 (holding military appellate judges were inferior officers despite their “significant authority,” where a superior officer set the procedural rules and could remove the judges, and where the judges’ ability to render a final decision was dependent on a superior’s assent); *Morrison*, 487 U.S. at 663, 671–73 (1988) (holding the independent counsel was an inferior officer despite possessing “a degree of independent discretion,” where the counsel had “limited duties” to prosecute “certain federal crimes,” had no ability to “formulate policy,” was of “limited tenure,” and could be removed for good cause).

1. The Patent Office Director Supervises and Directs Administrative Patent Judges

Administrative Patent Judges are subject to wide-ranging control by the Presidentially-appointed and Senate-confirmed Patent Office Director, who Congress has deemed “responsible for providing policy direction and management supervision for the Office and for the issuance of patents.” 35 U.S.C. §§ 3(a)(1), 3(a)(2)(A). This control takes many forms.

One form is the Director’s power to direct the Judges’ workload and thereby impact Board decisions. Congress vested the Director with the power to assign cases a three-member Board panel. 35 U.S.C. § 6(c). The Director thus enjoys unfettered discretion to deploy Administrative Patent Judges as he sees fit. The Director may choose to seldom, or never, assign cases to certain Judges. In this sense, Administrative Patent Judges occupy a position in the Patent Office’s chain-of-command that prevents them from working on a proceeding unless the Director beckons. They therefore do not have unsupervised, self-executing duties—they are beholden to the Director.

The Director can also directly exert power in individual cases by selecting himself or other non-Administrative Patent Judges to serve on the panel. Beyond APJs, the Board comprises “[t]he Director, the Deputy Director, the Commissioner for Patents, the Commissioner for Trademarks,” any of whom the Director may place on a three-member proceeding panel, including himself. 35 U.S.C. § 6(a). Indeed, the

Director currently sits on a number of active IPR panels. *See, e.g., Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, -00063, -00064, -00065, -00074, -00084; *HTC Corp. et al v. Elec. Scripting Prods., Inc.*, IPR2018-01031; -01032; *Lite-On Tech. Corp. v. Darfon Elecs. Corp.*, IPR2018-01062.

The Director also controls the activity of Administrative Patent Judges in particular cases through his authority over precedential opinions. The Patent Office's Standard Operating Procedures provide for a Precedential Opinion Panel which may review Board decisions on party request or *sua sponte*. *See* PTAB Standard Operating Procedure 2 (S.O.P.2), §§ II.C–D (Rev. 10, Sept. 20, 2018), *available at* <https://www.uspto.gov/sites/default/files/documents/SOP2%20R10%20FINAL.pdf>. The Director sits on this panel by default. *Id.* at § II.B. So the Director can intervene in any individual case he chooses by invoking *sua sponte* review of a given Board decision. The Director's hands-on involvement in proceedings, and discretionary review of issued decisions, make his APJ direction and supervision plain and unattenuated.

Beyond this direct involvement, the Director also exercises other control over Administrative Patent Judges throughout the lifecycle of a post-grant proceeding, including before institution, during the trial phase, and after the Board issues a final written decision. No *inter partes* review can begin without the Director's consent. Congress bestowed the Director with the ultimate power for instituting IPR proceedings. 35 U.S.C. § 314. A permissible exercise of that power could be to not

institute IPR proceedings at all. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.”). Although, as a practical matter, the Director often delegates the task of determining whether to institute to other Board members, the statute makes Administrative Patent Judges powerless to institute a review on their own—without the Director’s delegation of authority.

The Director also exerts supervisory control and direction during instituted proceedings. Part of this control is procedural. Again, the Director is tasked with forming the at least three-member panel for each proceeding. 35 U.S.C. § 6. In rare instances, the Director may choose to assign an expanded panel “to secure and maintain uniformity of the Board’s decisions.” PTAB Standard Operating Procedure 1 (S.O.P.1.), § III.M.1 (Rev. 15, Sept. 20, 2018), *available at* <https://www.uspto.gov/sites/default/files/documents/SOP%201%20R15%20FINAL.pdf>. The Director also determines who may be joined to a proceeding. 35 U.S.C. § 315(c); *see also Proppant Express Invs., LLC v. Oren Techs., LLC*, IPR2018-00914, Paper 38 (PTAB March 13, 2019) (Precedential Op. Panel, Iancu, Hirshfeld, Boalick, JJ.) (denying motion for joinder). And crucially, the Director is tasked with issuing regulations governing IPR proceedings, 35 U.S.C. § 316(a), which he has done, and which Administrative Patent Judges must follow. *See* 37 C.F.R. § 42 *et seq.*

The Director also has a degree of substantive control and influence over instituted proceedings. The statute vests the Director with the authority to set policy

and supervise others within the Patent Office: “The Director shall be responsible for providing policy direction and management supervision for the Office and for the issuance of patents and the registration of trademarks.” 35 U.S.C. § 3(a)(2)(A).

Through his role on the Precedential Opinion Panel, the Director helps form Office precedent that Administrative Patent Judges are bound to follow. *See generally* S.O.P.2. at § III. The Director has ultimate control over this process: “No decision will be designated or de-designated as precedential or informative without the approval of the Director.” *Id.* at *1. The Judges have strong incentive not to flout the Director’s policy guidance and precedential decisions because they otherwise risk not being assigned further cases if the Director so chooses. *See* 35 U.S.C. § 6(c); *cf.* John F. Duffy, *Are Administrative Patent Judges Unconstitutional?*, 77 *Geo. Wash. L. Rev.* 904, 908 n.21 (2009) (suggesting Director’s authority to designate precedential opinions of the Patent Trial and Appeal Board’s predecessor tended to make those judges inferior officers). Also, the Precedential Opinion Panel provides the Director with the ability to participate in interlocutory review of Administrative Patent Judge-issued orders. *See* S.O.P.2. § II.C; *Proppant*, IPR2018-00914, Paper 38.

Contrary to Polaris’ assertion (at 56), the Director may act to alter final written decisions by Administrative Patent Judges. The Precedential Opinion Panel entertains rehearing requests and may decide them on the merits. *See* S.O.P.2. § II.C. This Panel may also rehear cases *sua sponte*. *Id.* Separately, the Director may assign an expanded panel to review a decision *de novo*. *See* S.O.P.1. at § III.M.8; *see also Oil States Energy*

Servs., LLC v. Greene's Energy Grp., LLC, 138 S. Ct. 1365, 1380–81 (2018) (Gorsuch, J., dissenting). So there is less actual finality to a “final written decision” by three Administrative Patent Judges than in other contexts where officers were found inferior. See *Masias v. Sec'y of Health & Human Servs.*, 634 F.3d 1283, 1294 (Fed. Cir. 2011) (finding Vaccine Act special masters to be inferior officers despite deferential standard of review their decisions receive); *Edmond*, 520 U.S. at 664–65 (finding Coast Guard Court of Criminal Appeals judges inferior offices despite lack of plenary review of their decisions).

Finally, the Director does not need to support Administrative Patent Judge-issued final written decisions even after they leave the Office. The Director may oppose decisions appealed to this Court by intervening. See 35 U.S.C. § 143. This is not a hypothetical power but one the Director has exercised. See, e.g., *In re Mouttet*, 716 F. App'x 984, 986 (Fed. Cir. 2017) (nonprecedential) (“[T]he PTO’s Director concedes that the Board erred in rejecting claims 35–40 as indefinite and is not defending that rejection.”); *In re Rambus, Inc.*, 560 F. App'x 1005, 1005–06 (Fed. Cir. 2014) (nonprecedential) (granting Director’s remand request). For decisions that this Court or the Supreme Court remand back to the Board, the Director may designate new panel members. See PTAB Standard Operating Procedure 9 (S.O.P.9.), at *1 (Rev. 1, Sept. 25, 2017), available at https://www.uspto.gov/sites/default/files/documents/sop_9_%20procedure_for_decisions_remanded_from_the_federal_circuit.pdf.

2. APJs Are Subject To Removal by Superiors at the Agency, Further Demonstrating They Are Inferior Officers

Courts have relied on an officer's removability, even for cause, to deem that officer inferior. *Morrison*, for example, dealt with an officer "removable only for 'good cause' or physical or mental incapacity." 487 U.S. at 716 (1988) (Scalia, J., dissenting). Even with these restrictions on removability, the Court held "the fact that [officer] can be removed by the Attorney General indicates that she is to some degree 'inferior' in rank and authority." *Morrison*, 487 U.S. at 671 (1988). Similarly, this Court held that special masters subject to removal only for "incompetency, misconduct, or neglect of duty or for physical or mental disability or for other good cause shown" are inferior officers. *Masias*, 634 F.3d at 1294–95. Here, Polaris agrees (at 56) that Administrative Patent Judges are removable for cause, which further demonstrates that they are inferior officers under Supreme Court precedent.

In fact, Administrative Patent Judges may be removable even without cause, which would further demonstrate that they are inferior officers. "Under the traditional default rule, removal is incident to the power of appointment," and absent a statute declaring otherwise, appointees may typically be removed without cause. *Free Enter. Fund v. Pub. Co. Accounting Oversight Bd.*, 561 U.S. 477, 509 (2010). The statutes Polaris cites (at 56) do not displace the default rule. The first set—5 U.S.C. §§ 7521, 43.102(b)(6), 2102(a)—are inapplicable to Administrative Patent Judges. These statutes refer back refer to 5 U.S.C. § 3105, a statute governing Administrative Law

Judges, not Administrative Patent Judges. See John M. Golden, *Working Without Chevron: The PTO As Prime Mover*, 65 Duke L.J. 1657, 1682 (2016) (“[T]he PTAB’s APJs generally lack the statutory protection from removal, professional discipline, and performance reviews that ALJs have under the APA.” (internal quotation omitted)).

Otherwise, Polaris relies on 35 U.S.C. § 3(c), which simply states that the Patent Office’s officers are subject to Title 5’s provisions relating to federal employees. Federal employees may be removed under Title 5 “to promote the efficiency of the service.” 5 U.S.C. § 7513(a). “The ‘efficiency of the service’ standard of section 7513(a), however, is distinct from the ‘good cause’ standard of section 7521(a).” *Long v. Soc. Sec. Admin.*, 635 F.3d 526, 536 (Fed. Cir. 2011).

Administrative Patent Judges are further subject to implicit removal through the Director’s power to control who sits on the panel in any particular case. If the Director chooses not to assign cases to an Administrative Patent Judge, he will effectively be removed from service. Precedent suggests that the Director’s ability to remove an APJ from executing duties in this fashion is meaningful. See *Edmond*, 520 U.S. at 664 (considering superior officer’s ability to remove inferior officer from “judicial assignment,” not employment). Thus, APJs are subject to multifaceted removal actions, reinforcing that they are inferior officers.

* * *

Administrative Patent Judges administer the “certain, limited dut[y]” of deciding patent validity. *Morrison*, 487 U.S. at 671. To be sure, their role holds a

notable place in the patent system and impacts the patent monopoly and right to exclude. Yet, reviewing patent validity is not a matter of life and death, unlike the duties of the officers deemed inferior in *Edmond*. See 520 U.S. 662, 666. However important their duties may be, Administrative Patent Judges operate under the Director's direction and supervision subject to removal and are therefore inferior officers. Moreover, Congress recognized this in setting up the *inter partes* review system and determined that Administrative Patent Judges should not be subject to the cumbersome process of Presidential-appointment and Senate confirmation. Congress's determination there is entitled to deference. *Weiss v. United States*, 510 U.S. 163, 194 (1994) (Souter, J., concurring) (finding military judges to be inferior officers because "the chosen method for selecting military judges shows that neither Congress nor the President thought military judges were principal officers" so "deference to the political branches' judgment is appropriate"). That is especially true where, as here, striking down the current system would create chaos for the thousands of *inter partes* reviews currently underway.

CONCLUSION

For the reasons above, this Court should affirm the Board's decision finding claims 1–17 of the '057 unpatentable.

Dated: April 15, 2019

Respectfully submitted,

/s/ Michael J. Ballanco

Craig E. Countryman
Fish & Richardson P.C.
12390 El Camino Real
San Diego, CA 92130
(858) 678-5070

David M. Hoffman
Fish & Richardson P.C.
111 Congress Ave.
Suite 810
Austin, TX 78701
(512) 472-5070

Michael J. Ballanco
Fish & Richardson P.C.
1000 Maine Ave., SW
Suite 1000
Washington, DC 20024
(202) 783-5070

*Attorneys for Appellant,
Kingston Technology Co., Inc.*

CERTIFICATE OF SERVICE AND FILING

I certify that I electronically filed the foregoing document using the Court's CM/ECF filing system on April 15, 2019. Counsel was served via CM/ECF on April 15, 2019.

/s/ Michael J. Ballanco

Michael J. Ballanco

CERTIFICATE OF COMPLIANCE

The undersigned attorney certifies that Kingston Technology Co., Inc.'s Response Brief complies with the type-volume limitation set forth in Fed. R. App. P. 32(a)(7)(B). The relevant portions of the brief, including all footnotes, contain 12,207 words, as determined by Microsoft Word.

Dated: April 15, 2019

/s/ Michael J. Ballanco

Michael J. Ballanco

Fish & Richardson P.C.

1000 Maine Ave., SW, Suite 1000

Washington, D.C. 20024

(202) 783-5070