Trials@uspto.gov
571-272-7822

Paper 11
Entered: February 16, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INFOBIONIC, INC.,
Petitioner,

v.

BRAEMER MANUFACTURING, LLC,
Patent Owner.

Case IPR2015-01704
Patent 7,907,996 B2

Before KEN B. BARRETT, TRENTON A. WARD, and SCOTT C. MOORE, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge.*

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

I. INTRODUCTION

InfoBionic, Inc. ("Petitioner") filed a Petition requesting *inter partes* review of U.S. Patent No. 7,907,996 B2 ("the '996 patent"). Paper 1 ("Pet."). The Petition challenges the patentability of claims 1, 12, 18, and 23 of the '996 patent on the grounds of obviousness under 35 U.S.C. § 103. Braemar Manufacturing, LLC (Patent Owner) filed a Preliminary Response to the Petition. Paper 9 ("Prelim. Resp."). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted "unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

After considering the information presented in the Petition, we determine that Petitioner has not established a reasonable likelihood that it would prevail with respect to any of the claims challenged in the Petition. Accordingly, we do not authorize an *inter partes* review to be instituted as to any challenged claim of the '996 patent.

A. Related Proceedings

One or both parties identify, as matters involving or related to the '996 patent, *CardioNet, LLC and Braemar Manufacturing, LLC v. InfoBionic, Inc.*, Case No. 1:15-cv-11803 (D.Mass), *CardioNet, LLC and Braemar Manufacturing, LLC v. The Scottcare Corp. et al.*, Case No. 2:12-cv-2516 (E.D. Pa.), and *CardioNet, LLC and Braemar Manufacturing, LLC v. MedNet Healthcare Tech. Inc. et al.*, Case No. 2:12-cv-02517 (E.D. Pa.); and Patent Trial and Appeal Board cases IPR2015-01679 (U.S. Patent No. 6,225,901), IPR2015-01688 (U.S. Patent No. 6,940,403), and IPR2015-01705 (U.S. Patent No. 7,212,850). Pet. 1–2; Papers 7, 10.

Petitioner indicates that U.S. Patent No. 8,945,019 is a continuation of and claims priority to the '996 patent and that U.S. Patent Application No. 14/593,237 also claims priority to the '996 patent and is pending before the Patent Office. Paper 10.

B. The'996 Patent

The '996 patent pertains to "processing and presenting arrhythmia event information from physiological data, for example, selectively presenting atrial fibrillation [AF] events to a medical practitioner." Ex. 1001, col. 1, ll. 23–26. A processing system analyzes arrhythmia event data received from both a human-assessment and from a monitoring system and determines whether to generate a graph or other presentation related to the arrhythmia events. *Id.*, col. 3, ll. 1–5.

C. Illustrative Claim

Claims 1, 12, 18, and 23 are independent claims. Claim 1, reproduced below, is illustrative:

> 1. A machine-implemented method comprising:
>
> identifying atrial fibrillation events in physiological data obtained for a living being, wherein identifying atrial fibrillation events comprises examining the physiological data in multiple time intervals, and identifying intervals in which at least one atrial fibrillation event has occurred;
>
> obtaining heart rate data for the living being;
>
> receiving a human assessment of a subset of the identified atrial fibrillation events; and
>
> based on the human assessment of the subset of the identified atrial fibrillation events, pictographically presenting, using a common time scale, information regarding the heart rate data for the multiple time intervals during a defined time period in alignment with indications of atrial fibrillation activity for

> the identified intervals, according to the identified atrial fibrillation events, during the defined time period such that heart rate trend is presented with atrial fibrillation burden, wherein pictographically presenting information regarding the heart rate data comprises displaying for each of the multiple time intervals a range of heart rates and a heart rate average.

Ex. 1001, col. 5, l. 64–col. 6, l. 19.

D. Applied References

Reference			**Exhibit No.**
Bock	US 6,490,479 B2	Dec. 3, 2002	Ex. 1005
Walker	US 7,490,085 B2	Feb. 10, 2009	Ex. 1006
Reinhold	US 4,531,527	July 30, 1985	Ex. 1007
ACC/AHA Guidelines for Ambulatory Electrocardiography, JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY, Vol. 34, No. 3, pp. 912–948, September 1999 ("ACC Guidelines")			Ex. 1008

Petitioner relies also on the Declaration of Dr. Robert T. Stone, dated August 6, 2015, (Ex. 1002) in support of Petitioner's arguments.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

References	**Basis**	**Claims**
Bock, Walker, the ACC Guidelines, and Reinhold	§ 103(a)	1, 12, 18, and 23
Bock, the ACC Guidelines, Walker, and Reinhold	§ 103(a)	1, 12, 18, and 23

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015), *cert. granted sub nom. Cuozzo Speed Techs. LLC v. Lee*, 84 U.S.L.W. 3218 (U.S. Jan. 15, 2016) (No. 15-446). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

On this record and for purposes of this Decision, we determine that only the claim term addressed below requires express construction.

"subset"

Independent claim 1 recites "receiving a human assessment of a *subset* of the identified atrial fibrillation events; and based on the human assessment of the *subset* of the identified atrial fibrillation events, pictographically presenting [certain information]." Ex. 1001, col. 6, ll. 5–9 (emphasis added). The other challenged claims, independent claims 12, 18, and 23, recite the term "subset," also.

Petitioner argues that "subset" should be construed to mean "some or all elements of a set." Pet. 12. Patent Owner, on the other hand, argues that "subset" means "a set that is less than all the elements of a given set." Prelim. Resp. 6 (quoting Ex. 1013, 16 (the District Court's claim

construction memorandum opinion)).[1] Thus, the issue is whether a subset may encompass all the elements of a set.

Petitioner relies upon the definition set forth in a general dictionary in asserting that "[t]he plain and ordinary meaning of 'subset' is 'a set each of whose elements is an element of an inclusive set.'" Pet. 12 (citing Ex. 1009, 3 (MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 1170 (10th ed. 2001)).

Petitioner also relies upon the testimony of Dr. Stone. *Id.* at 12–13 (citing Ex. 1002 ¶¶ 24, 25). We do not find the testimony of Petitioner's expert to be persuasive or helpful as it repeats the Petitioner's arguments and offers little or no elaboration as to how one of ordinary skill in the art would understand the term "subset." *See* Ex. 1002 ¶¶ 24, 25. *See* 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 Rohm and Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing requires a fact finder to credit the inadequately explained testimony of an expert). We also do not find persuasive Petitioner's argument, based on extrinsic evidence, that Patent Owner's position in related litigations should influence our determination of the proper construction in this forum. *See* Pet. 13–14. We now turn to the intrinsic evidence.

Both parties argue that their respective proposed construction is consistent with the use in the Specification of the term "subset." Pet. 12–13; Prelim. Resp. 8. Neither party, in articulating its arguments regarding the construction of "subset," directs our attention to any pertinent evidence in

[1] *See also* Ex. 1014, 18.

the prosecution history.

The Specification refers to a "subset" in describing the embodiment of Figures 5 and 6. *See* Ex. 1001, col. 4, ll. 26–59. In that embodiment, the system at step 502 analyzes the physiological data and, at step 503, identifies and flags AF events and reports those flags (constituting a first group of data) to the processing system. *Id.*, col. 4, ll. 26–34.

> Similarly, at 504, the system identifies and reports physiological data, such as ECG [electrocardiogram] data, for a *subset* of the events identified at 502 and reported at 503. Notably, the system, in this implementation, need not report physiological data for each flag assigned at 503, but need only report data associated with the most significant events identified at 502, thereby minimizing the data sent to a CVT [cardiovascular technician].

Id., col. 4, ll. 35–41 (emphasis added). The CVT analyzes this data and identifies arrhythmia events thereby creating a second group of data. *Id.*, col. 4, ll. 42–44. The processing system compares the two groups of data and, if the system determines that enough of the human-assessed events match the system-reported events, the system-reported data (at step 302) is deemed valid and the data associated with each system-flagged event is pictorially presented. *Id.*, col. 4, ll. 44–54.

> Significantly, in this implementation, while this pictographic representation can contain all such data, the CVT need only review a *subset* of this data. In short, the system achieves increased accuracy in the presentation of information relating to arrhythmia events while minimizing the data that the CVT reviews.

Id., col. 4, ll. 54–59 (emphasis added).

Petitioner argues that "[t]he specification contemplates sending all of the system-identified arrhythmia data to the CVT for assessment and

provides that the system '***need only***' send data for the most significant system-identified events to 'minimize[e] the data sent to the' technician." Pet. 13 (quoting[2] Ex. 1001, col. 4, ll. 54–59). Thus, we understand Petitioner to assert that the Specification indicates that the system may send to the technician all of the system-identified data or only data for the most significant events. Petitioner's argument is not persuasive as it relies on certain phrases in isolation rather than the Specification as a whole. The Specification emphasizes the benefit of the human assessing a group of data that is less than the entire set of system-generated data. The Specification's reference to the "need only" to report the most significant events to minimize data sent to the technician is describing the benefit that flows from the use of the "subset" of the previous sentence, not merely offering one alternative definition of a "subset." Ex. 1001, col. 4, ll. 54–59 (contrasting the "subset" and "all such data"); *see also id.*, col. 4, ll. 35–41 (indicating that the use of a "subset" is the reason why the system "need only report data associated with the most significant events.")

Also, Petitioner, in articulating Ground 1, argues that the "receiving a human assessment of a subset of the identified atrial fibrillation events" language of claim 1:

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[2] Patent Owner notes that Petitioner misquotes the cited portion of the Specification. Prelim. Resp. 8 (characterizing the Specification as "discussing 'minimizing the data that the CVT *reviews*' and not addressing how much data is *sent* to the technician"). Petitioner may be referring to a prior paragraph of the Specification which mentions "report[ing]" data for the most significant identified events thereby "minimizing the data sent to a CVT." Ex. 1001, col. 4, ll. 39–41.

> does not recite receiving human assessment of **only** a subset of the identified atrial fibrillation events. Therefore, under a broad and reasonable interpretation, the recited limitation will be satisfied if human assessments of **some or all** of the identified atrial fibrillation events are received, because receiving human assessments of all events necessarily satisfies receiving some human assessments of some events.

Pet. 28–29. To the extent that Petitioner is arguing that a given set necessarily includes the members of a subset of that same set, we are not persuaded for reasons similar to those discussed above. Petitioner offers no persuasive argument or evidence that one of ordinary skill in the art, reading the claim language in light of the Specification, would understand the pertinent language to have the meaning Petitioner suggests. *See id.*

We determine that Petitioner's proposed construction, where the subset could constitute all the members of the set, is unreasonably broad when the claims are read in light of the Specification.

For purposes of this decision and based on the record before us, the term "subset" means "a set that is less than all the elements of a given set."

B. Ground 1: Obviousness over Bock, Walker, ACC Guidelines, and Reinhold

Petitioner asserts that claims 1, 12, 18, and 23 are obvious over Bock (Ex. 1005), Walker (Ex. 1006), the ACC Guidelines (Ex. 1008), and Reinhold (Ex. 1007). Pet. 21–48. Claims 1, 12, 18, and 23 all require a "human assessment of the subset of the identified atrial fibrillation events." Patent Owner opposes, arguing that the cited prior art does not disclose the "subset" aspect of the challenged claims under the proper construction of that term. Prelim. Resp. 34–37.

Bock pertains to a computer-implemented method and apparatus for detecting atrial fibrillation. Ex. 1005, col. 1, ll. 6–10; col. 3, ll. 65–67. Patent Owner maintains that it is undisputed that Bock does not disclose the "human assessment" feature of the challenged claims. Prelim. Resp. 19. Petitioner argues that it would have been obvious to modify Bock to have a human assessment based on the knowledge of one of ordinary skill and Walker. Pet. 24–25. Petitioner asserts that the ACC Guidelines indicates such knowledge of one of ordinary skill, and relies on that reference's teaching that "[i]t is critical that each classification of arrhythmia morphology and each ischemic episode be reviewed by an experienced technician or physician to ensure accurate diagnosis." Pet. 25 (quoting Ex. 1008, 917). As will be discussed further below, Petitioner maintains, for each challenged claim, that Walker discloses the human assessment of a subset of data. *Id.* at 27–28, 31 (claim 1), 38 (claim 12), 41 (claim 18), 46–48 (claim 23). Petitioner relies on Reinhold for the specific pictographical presentation of heart rate. Pet. 33–34.

Walker pertains to refining the processing and analysis of medical diagnostic image data. Ex. 1006, col. 71, ll. 28–37. Figure 26 of Walker is reproduced below:

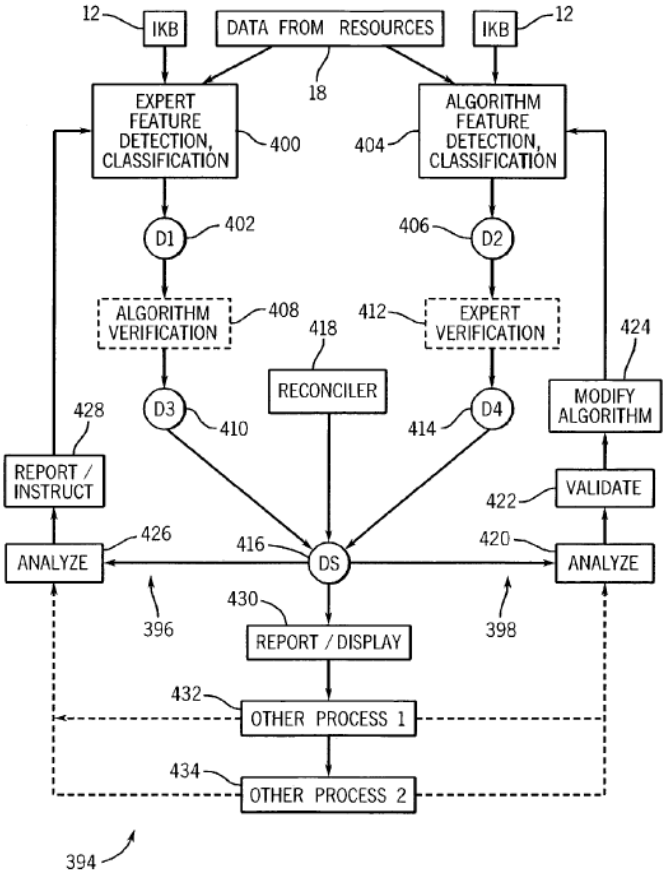

Figure 26 of Walker depicts "a flowchart illustrating a technique for refining or training a computer-assisted algorithm and a medical professional." *Id.*, col. 5, ll. 15–17. Walker explains that "[t]he process may include separate, although interdependent modes, such as a professional training mode 396 [the left upper portion of Figure 26] and an algorithm training mode 398 [the upper right portion]." *Id.*, col. 71, ll. 44–47. Both modes start with the same set of "data from resources" (element 18).

An expert or medical professional (step 400) performs a feature detection and classification analysis of the "data from resources" (element 18), typically as part of a diagnostic image reading process. *Id.*, col. 71, ll. 60–66. The expert's analysis results in the creation of a dataset D1, which may be an annotated medical diagnostic image. *Id.*, col. 72, ll. 3–

6. "Any suitable technique can be used for producing the dataset, such as conventional annotation, dictation, interactive marking, and similar techniques." *Id.*, col. 72, ll. 6–8. In parallel, an algorithm performs a similar analysis of the same set of "data from resources" and generates dataset D2, "which may be similarly annotated for display." *Id.*, col. 72, ll. 9–23. The algorithm-produced dataset D2 optionally may be verified by the expert (step 412) resulting in dataset D4 (element 414), and the expert produced dataset D1 optionally may be verified by the algorithm (step 408) resulting in dataset D3 (element 410). *Id.*, col, 72, ll. 24–28, 51–55. The dataset D4 "may be reconstructed, when the data represents images, and may be annotated to indicate features identified by the algorithm and the changes made to such identification or classification by the expert or medical professional." *Id.*, col. 72, ll. 63–67. The datasets D3 and D4 are joined in a union dataset 416 (labeled DS in Figure 26 and referred to as D5 in the text) "which may again comprise of [sic] one or more images displaying the origin of particular features detected and classified, along with changes made by either the algorithm or the expert during verification." *Id.*, col. 73, ll. 1–5. A reconciler 418 resolves conflicts between the detection and classification performed by the algorithm and by the expert and resolves conflicts that result from the modifications made during the verification steps 408 and 412. *Id.*, col. 73, ll. 5–14.

Petitioner maintains that Walker's D4 is a subset of dataset D2 and the reconciler's action is a human assessment of that subset. Pet. 27–28. Petitioner asserts that "[b]ecause of the changes made to dataset D2 by the expert, dataset D4 includes a subset of dataset D2." Pet. 27 (citing Ex. 1002

¶ 39).[3] However, Petitioner does not explain adequately why this is correct, and the cited expert testimony merely repeats the Petitioner's conclusory argument, adding the phrase "[i]n my opinion" (Ex. 1002 ¶ 39). Specifically, Petitioner does not persuade us that the analysis of dataset D2 results in the deletion of data in the creation of dataset D4 such that dataset D4 contains less members than the original dataset D2. Walker explains that the "changes" to a dataset may be by "conventional annotation, dictation, interactive marking, and similar techniques." Ex. 1006, col. 72, ll. 6–8. Furthermore, Walker discloses that dataset D4 "may be *annotated* to indicate features identified by the algorithm." Ex. 1006, col. 72, ll. 63–67 (emphasis added). This does not suggest that the analysis produces a new dataset that contains fewer elements than the analyzed dataset. Further, the reconciler acts upon a union dataset 416 (D5 or DS) of datasets D3 and D4, not simply dataset D4 alone, suggesting that the human (reconciler) assessment is performed on a set of data larger than D2. *See id.*, col. 73, ll. 1–19.

For these reasons, we do not find that Walker discloses a human assessment of a *subset* of data. Petitioner does not rely on any other reference in its proposed combination for the claim recitation regarding a "human assessment of the subset of the identified atrial fibrillation events," Claims 1, 12, 18, and 23. Accordingly, we are not persuaded that Petitioner has shown a reasonable likelihood of prevailing in its challenge that claims 1, 12, 18, and 23 of the '996 patent would have been obvious to a person of ordinary skill in the art at the time of the invention over Bock,

[3] Petitioner appears to offer alternative arguments based on "subset" being construed as either all or less than all of the elements of a set. Pet. 27.

Walker, the ACC Guidelines, and Reinhold (Ground 1).

C. Ground 2: Obviousness over Bock, ACC Guidelines, Walker, and Reinhold

Petitioner's Ground 2 is similar to Ground 1, and is offered by Petitioner in the event that its proposed construction of "subset" is not adopted and in the event that the Board does not find that Walker teaches the "subset" feature. Pet. 48. Petitioner maintains that one of ordinary skill in the art would have been motivated to modify the combined system of the cited references "to have the human technician review only a portion of the events detected by probability engine 40 [of Bock]." Pet. 49. Patent Owner responds that Petitioner's arguments and the relied-upon testimony of Dr. Stone are conclusory and that those positions are inconsistent with the ACC Guidelines. Prelim. Resp. 37–41. We find Patent Owner's arguments persuasive.

Petitioner argues that "[a] person or ordinary skill in the art would have recognized that reducing the number of events assessed by the human would (1) increase the efficiency and decrease cost of the system and (2) be an inevitable result of the system." Pet. 49 (citing Ex. 1002 ¶ 74 (Dr. Stone's declaration)). Petitioner further argues that "[a] POSITA would appreciate that reviewing a portion of the algorithm-identified AF states identified by [Bock's] probability module 40 would still ensure accurate diagnosis and would be an efficient and effective method of evaluating the algorithm-based AF states identified by probability engine 40." Pet. 51 (citing Ex. 1002 ¶¶ 74–75). Petitioner's arguments and Dr. Stone's testimony repeating the same (with the addition of the phrase "in my opinion") are too conclusory to persuade us that Petitioner has met its

burden at this stage of the case. *See* 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.").

Further, Petitioner relies on teachings of Walker and the ACC Guidelines, which encourage the use of more, not fewer, human assessments, and also encourage the assessment of more data. For example, Petitioner applies Walker in such a way that there are multiple reviews by humans. Petitioner's identified "human assessment" is the action by the reconciler (Pet. 27–28) that reviews a union dataset that is itself a compilation of two human reviews—the expert's review (step 412) of the algorithm-produced dataset D2 and the expert's review (step 400) of the entire original dataset (*see* Ex. 1006, col. 73, ll. 1–5; Fig. 26).

Additionally, Petitioner's reliance on the ACC Guidelines undermines Petitioner's assertion that one of ordinary skill would have recognized that reviewing a portion, rather than all, of the data would still ensure an accurate diagnosis. As mentioned above, Petitioner argues that it would have been obvious to modify Bock to have a human assessment based on the knowledge of one of ordinary skill in the art and in light of Walker. *See* Pet. 24–25. That knowledge is that "[i]t is critical that each classification of arrhythmia morphology and each ischemic episode be reviewed by an experienced technician or physician to ensure accurate diagnosis." Pet. 25 (quoting Ex. 1008, 917). Petitioner does not reconcile the relied-upon evidence of the criticality of a human review of each event with the assertion that one would have found it obvious to review only a subset of these events.

Petitioner asserts that the proposed modification "would have amounted to nothing more than the use of a known technique to improve a

similar device that yields nothing more than predictable results." Pet. 50 (citing *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)). This is not persuasive at least because Petitioner's proposed modification is to a system resulting from the combination of the teachings of four references and Petitioner has not identified "a similar device" known in the prior art and ready for improvement. *See* Pet. 50 ("the combined system of *Bock, ACC Guidelines, Walker, and Reinhold* could be modified to receive a human assessment of less than all . . . ."). Similarly, we are not persuaded by Petitioner's conclusory "design choice" rationale based on the apparent proposition that reviewing a portion of the data is "one of a 'finite number of identified, predictable solutions.'" Pet. 51 (quoting *KSR*, 550 U.S. at 402–03).

Petitioner has not demonstrated that there is a reasonable likelihood that it would prevail in showing that the subject matter of the challenged claims 1, 12, 18, and 23 would have been obvious over Bock, the ACC Guidelines, Walker, and Reinhold (Ground 2).

III. CONCLUSION

We determine Petitioner has not demonstrated there is a reasonable likelihood of establishing the unpatentability of claims 1, 12, 18, and 23 of the '996 patent.

IV. ORDER

For the foregoing reasons, it is

ORDERED that the Petition is *denied* as to all challenged claims, and no trial is instituted.

For PETITIONER:

Leslie I. Bookoff
Biju I. Chandran
Dinesh N. Melwani
BOOKOFF MCANDREWS, PPLC
lbookoff@bookoffmcandrews.com
bchandran@bookoffmcandrews.com
dmelwani@bookoffmcandrews.com
docketing@bookoffmcandrews.com

For PATENT OWNER:

Ching-Lee Fukuda
Megan F. Raymond
Bradford J. Badke
ROPES & GRAY LLP
Ching-Lee.Fukuda@ropesgray.com
Megan.raymond@ropesgray.com
Jim.Badke@ropesgray.com