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11
12 **IN THE UNITED STATES DISTRICT COURT**
13 **FOR THE NORTHERN DISTRICT OF CALIFORNIA**
14 **SAN JOSE DIVISION**

15
16 INARI MEDICAL, INC.,
17 Plaintiff,
18 v.
19 IMPERATIVE CARE, INC.,
20 Defendant.

Civil Action No. 5:24-cv-03117-EKL-SVKx

**CLAIM CONSTRUCTION EXPERT
REPORT OF TROY THORNTON**

Imperative Care v. Inari Medical
U.S. Patent 11,974,910
Imperative Care Ex. 1053

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I. INTRODUCTION

1. I have been retained as an expert witness by Defendant Imperative Care, Inc. (“Imperative Care”) in the above-captioned case. I previously provided a declaration in this case in support of Imperative Care’s Opposition to Plaintiff’s Motion for Preliminary Injunction.

2. I understand Plaintiff Inari Medical, Inc. (“Inari”) has alleged that Imperative Care’s Symphony Thrombectomy System infringes several Inari patents. I collectively refer to the patents in the case as the “Asserted Patents.” In this Report, I specifically offer opinions about claim terms appearing in three patents:

- U.S. Patent No. 11,544,005 (“the ’005 Patent”),
- U.S. Patent No. 11,865,291 (“the ’291 Patent”), and
- U.S. Patent No. 11,974,910 (“the ’910 Patent”).

3. I understand the parties are currently at the stage of the case where they attempt to define certain terms in the patents. I understand that this process of defining claim terms is called “claim construction.” I have been asked to provide my opinions regarding the claim construction of two terms from the perspective of a person of ordinary skill in the art:

- “support,” which appears in claims 10-11 of the ’005 Patent; and
- “shaped to be intravascularly advanced,” which appears in claims 1 and 11 of the ’910 Patent.

I will refer to these terms in this Report as the “Disputed Terms.”

4. I understand Imperative Care may submit this Report to the Court in support of its claim construction arguments. I declare under penalty of perjury that the opinions contained in this Report are my own, and true and correct to the best of my knowledge. If called upon to testify regarding these opinions, I could testify competently thereto.

II. EXPERIENCE AND QUALIFICATIONS

5. My experience and qualifications are summarized in my *curriculum vitae*, a copy of which is included as **Appendix A**.

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III. MATERIALS CONSIDERED

17. In preparing this Report, I have considered the materials referenced herein and/or identified on the list of materials considered, which I have attached as **Appendix B**. I have also served as an expert in the related *inter partes* review proceedings and have relied upon my knowledge of the prior art developed through those proceedings. I further provided a declaration relating to the preliminary injunction motion and have relied upon my knowledge of the case developed through that proceeding.

18. I have also relied on my education, training, and experiences, and my knowledge of pertinent literature in the field of the hemostasis valves and catheters and catheter systems for aspirating unwanted material from a patient.

19. I reserve the right to supplement, change, clarify, or modify my opinions contained herein, should additional information and/or documentation become available to me. For example, at the time of drafting this Report, I do not have access to Inari’s claim construction arguments, or any opinions offered by Plaintiff Inari Medical Inc.’s (“Inari” or “Plaintiff”) expert on the matter of claim construction, outside of the opinions Inari’s experts have offered as part of the related *inter partes* review proceedings and the preliminary injunction motion. I may have additional opinions based on any new claim construction arguments or opinions raised by Inari or its experts. I therefore reserve the right to submit a rebuttal report in response to any expert report(s) submitted on behalf of Inari.

IV. APPLICABLE LEGAL STANDARDS

20. I am a biomedical engineer by training and profession. The opinions I am expressing in this Report involve the application of my education, training, and technical knowledge and experience to the meaning of the terms in the relevant patents.

21. Although I have had some prior exposure to patent matters, I am not an expert in patent law. Therefore, I have been advised of certain principles of patent law applicable in this matter, which I have used in reaching my opinions. The paragraphs below express my understanding of how I must apply these principles in forming my opinions.

///

1 **A. Claim Construction**

2 22. I understand that the first step in assessing the patentability of a patent claim is
3 to understand the meaning of the words used in the claims. I understand this process of
4 defining, or construing, the claim terms is generally referred to as claim construction.
5 Generally speaking, I understand that I am to apply the ordinary and customary (i.e., plain
6 and ordinary) meaning of each claim term as would have been understood by a person of
7 ordinary skill in the art at the time of the invention, consistent with the specification and
8 prosecution history.

9 23. I also understand that the patentee may act as its own lexicographer such that
10 they may redefine a claim term to have a meaning that is different from the plain and ordinary
11 meaning. I understand that when a patentee has acted as its own lexicographer, the patentee's
12 definition should be applied instead of the plain and ordinary meaning that the term would
13 have absent the redefinition. I understand that the patentee can redefine a claim term in either
14 the specification or in statements made to the Patent Office during prosecution of the patent.
15 I understand that the patentee's redefinition of a term does not need to be provided in express
16 definitional format, but rather that the redefinition can be implied through the disclosure of
17 the specification or the patentee's statements during prosecution.

18 **B. Indefiniteness**

19 24. I understand that sometimes, a patent claim may use language that is too vague
20 or ambiguous. I have been informed that the patent laws could render such patent claims
21 invalid for being indefinite. I understand that a claim is indefinite if the claim fails to inform
22 those skilled in the art about the scope of the invention with reasonable certainty, after review
23 of the specification and prosecution history.

24 **C. Person of Ordinary Skill in the Art**

25 25. It is my understanding that when interpreting the claims of a patent, I must do
26 so based on the perspective of a person of ordinary skill in the art at the relevant priority date.
27 I have been instructed to assume for the purposes of my opinions that the relevant priority
28 dates of the relevant patents are as summarized in the table below:

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Patent Number	Priority Date
11,544,005	August 13, 2018
11,974,910	
11,865,291	September 6, 2017

However, the opinions I provide in this Report would not change if each priority date differed by a year or two.

26. I am informed that the person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. I understand I am to assume this is a person of ordinary creativity.

27. I am informed that in determining the level of ordinary skill in the art, several factors are considered. Those factors may include: (i) the type of problems encountered in the art; (ii) prior art solutions to those problems; (iii) the rapidity with which innovations are made; (iv) the sophistication of the technology; and (v) the educational level of active workers in the field. A person of ordinary skill in the art must have the capability of understanding the scientific and engineering principles applicable to the pertinent art.

28. Based on my review of the specifications and claims of the Asserted Patents, it is my opinion that a person of ordinary skill in the art for the '005 and '910 Patents would have had an undergraduate degree in mechanical engineering or a related engineering discipline and 2-4 years of catheter design experience. It is my opinion that a person of ordinary skill in the art for the '291 Patent would have had an undergraduate degree in mechanical engineering or a related engineering discipline and 2-4 years of product design or engineering experience.

29. I can make this assessment because during my career, I had experience assigning engineers to work on mechanical design projects, including projects to design catheters, sheaths and related components such as hemostasis valves for use in cardiovascular procedures. For such projects, I would assign an engineer with the experience described above.

1 The hemostasis valve of claim 1 wherein the spring is positioned between the
2 first member and the *support*.

3 Claim 15:

4 The hemostasis valve of claim 1 wherein the actuator further comprises a
5 second member movably coupled to the *support*,

6 Claim 18:

7 An aspiration catheter system, comprising:
8 ...
9 a hemostasis valve comprising—
10 a *support*:
11 an actuator having at least a first member movably coupled to the *support*;
12 a collapsible tubular sidewall defining a lumen carried by the *support*,

13 Claim 20:

14 A hemostasis valve, comprising:
15 a *support*;
16 a button movably coupled to the *support*;
17 a collapsible tubular sidewall carried by the *support* and defining a lumen; ...
18 a biasing member positioned between the *support* and the button,

19 32. I understand that the parties have competing proposals with respect to the term
20 “support,” as shown below:

Imperative Care’s Position	Inari’s Position
The term “support” is indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.	Plain and ordinary meaning

22 33. I do not believe the ’005 and ’291 Patents inform a person of ordinary skill in
23 the art about what structures could fall within (or outside) the scope of the term “support”
24 with reasonably certainty. I have reached this conclusion based on my review of the claims,
25 specifications, and prosecution histories, as well as my experience in the field of catheters and
26 hemostasis valves. *First*, I see that none of the claims identified above describe the structure,
27 shape, materials, dimensions, or properties of the “support.” Some claims state that a “first
28

1 member” or a “second member” is “movably coupled to the support” and that a “collapsible
2 tubular sidewall” is “carried by the support.” But these claims merely describe what the
3 “support” does. The claims provide no guidance for the structure that accomplishes these
4 results.

5 34. Dependent claim 9 in the '291 patent states that “the spring is positioned
6 between the first member and the support.” While this claim vaguely identifies a relative
7 position of the “support,” it also fails to identify any structure. Thus, the claims cannot help a
8 person of ordinary skill in the art figure out what structures could fall within (or outside) the
9 scope of the term “support.”

10 35. **Second**, my opinion is informed by my review of the specifications of the '005
11 and '291 Patents. I notice that the term “support” does **not** appear in the specifications and
12 the specifications do not describe any parts of a hemostasis valve as providing a “supporting”
13 function. I also notice that the specifications use other words to describe the structure of the
14 hemostasis valve. For example, the '291 Patent specification describes the components
15 around the buttons (first/second member) and collapsible tubular member using terms other
16 than “support” (*i.e.*, proximal cap, housing, outer shell, distal cap as shown below):

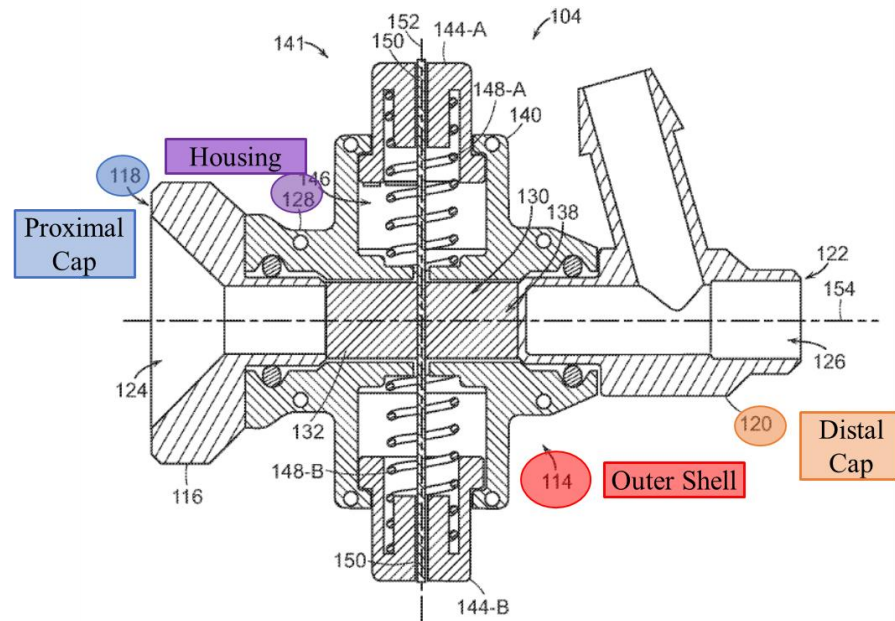


FIG. 2

1 These descriptions add to the uncertainty as to what structures could form the claimed
2 “support.”

3 36. I also notice that the '005 Patent does not describe a hemostasis valve in any
4 detail and specifically does not describe a hemostasis valve having an actuator and filament
5 as claimed. I see that the '005 Patent references a U.S. patent application (No. 16/117,519)
6 titled “Hemostasis Valves and Methods of Use.” ('005 Patent at 5:49-54.) I searched that
7 application and found that it does *not* use the word “support” either.

8 37. *Third*, I reviewed the prosecution histories of the '005 and '291 Patents. In
9 the Notice of Allowance for the '291 Patent, the examiner found that a prior art reference
10 called Hartley had multiple “supports.” Specifically, the examiner identified three different
11 components as meeting the “support” limitation – a housing 6, a flange 7, and a radial flange
12 10. ('291 Patent Prosecution History, Notice of Allowance.) I have identified those
13 components from Hartley in the figure below:

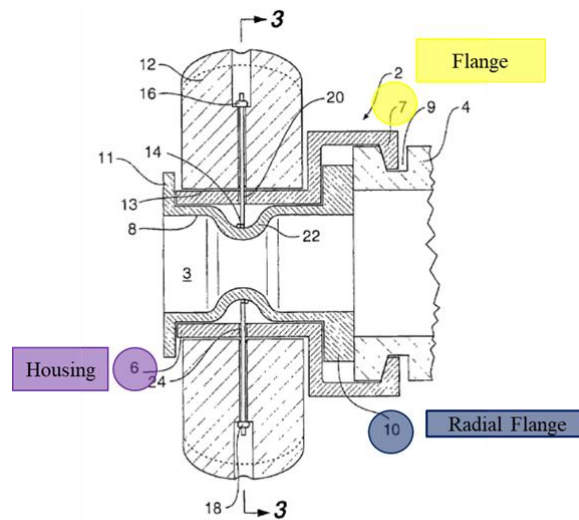


Fig 1

23 (Hartley at Fig. 1.) However, the examiner never said what is the “support” is the '291
24 Patent. The examiner at best identified examples of a “support” in *Hartley* and confirmed
25 that the term “support” is broad enough to cover several different structures. While the
26 examiner’s analysis may help a person of ordinary skill in the art identify some structures that
27 fall within the definition of “support,” it would not inform a person of ordinary skill in the art
28 what structures could fall outside the scope of the term “support.”

1 common understanding describes a support's purpose or function, not its structure. For a
2 person of ordinary skill in the art to understand the structure(s) encompassed by the term
3 "support" in the claims with reasonable certainty, additional details about the structure would
4 be required. However, as shown above, the '005 and '291 Patents do not provide any
5 additional information about the structure of the "support" – in fact, the patent specifications
6 do not use the term.

7 42. Accordingly, it is my opinion that the '291 and '005 Patents fail to inform a
8 person of ordinary skill in the art about what structure could fall within (or outside) the scope
9 of the term "support" with reasonably certainty.

10 **VI. THE SCOPE OF "SHAPED TO BE INTRAVASCULARLY ADVANCED" IS**
11 **NOT DEFINED WITH REASONABLE CERTAINTY**

12 43. The term "shaped to be intravascularly advanced" appears in claims 1 and 11
13 of the '910 Patent, as shown below:

14 Claim 1:

15 A clot treatment system for treating clot material comprising a pulmonary
16 embolism in a vasculature of a patient, comprising:

17 a first clot aspiration assembly ...

18 a second clot aspiration assembly, including:

19 a second catheter advanceable through the first catheter, wherein the second
20 catheter has a distal portion, wherein the second catheter has a size of 16
21 French or greater, and wherein the second catheter is *shaped to be*
22 *intravascularly advanced* through the vasculature of the patient such that
23 the distal portion of the second catheter is positioned proximate to the
24 pulmonary embolism

25 Claim 11:

26 A clot treatment system for treating clot material comprising a pulmonary
27 embolism in a vasculature of a patient, comprising:

28 a first clot aspiration assembly ...

a second clot aspiration assembly, including:

a second catheter advanceable through the first catheter, wherein the second
catheter has a distal portion, wherein the second catheter has a size of 16
French or greater, and wherein the second catheter is *shaped to be*
intravascularly advanced through the vasculature of the patient such that
the distal portion of the second catheter is positioned proximate to the
pulmonary embolism

1 44. I understand that the parties have competing proposals with respect to the term
2 “shaped to be intravascularly advanced,” as shown below:

Imperative Care’s Position	Inari’s Position
The term “shaped to be intravascularly advanced” is indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.	A catheter structure sized and made of materials so that it can be moved through the vasculature of a patient to a location of a pulmonary embolism

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8 45. I do not believe the ’910 Patent informs with reasonable certainty those skilled
9 in the art about the scope of this term. I have reached this conclusion based on my review of
10 the claims, specification, and prosecution history, as well as my experience in the field of
11 catheters and hemostasis valves. **First**, the claims do not describe what it means to be
12 “shaped to be intravascularly advanced” and do not otherwise identify any specific shape that
13 would satisfy this limitation.

14 46. **Second**, the term “shaped to be intravascularly advanced” does **not** appear
15 anywhere in the specification of the ’910 Patent and the specification does not otherwise
16 describe what it means to be “shaped to be intravascularly advanced.” For example, the
17 specification does not use the words I would typically expect to see for describing the shape
18 of a catheter like straight, curved, or tapered. The specification also does not include
19 information about the catheter that might help determine its ability to be intravascularly
20 advanced, such as stiffness, flexibility, or torque-ability.

21 47. **Third**, the term “shaped to be intravascularly advanced” was not discussed
22 during the prosecution history of the ’910 Patent.

23 48. **Fourth**, I considered my experience in this field. Generally, when a person of
24 ordinary skill in the art discusses shaping a device for intravascular delivery, one aspect the
25 person might include is selecting an acceptable diameter for the device to fit within the
26 patient’s vasculature. However, I see that claims 1 and 11 separately identify the diameter of
27 the catheter – “16 French or greater” – so “shaped to be intravascularly advanced” must mean
28 something other than a specific diameter, or else the clause would be superfluous.

1 49. Another aspect a person of ordinary skill in the art may consider is whether the
2 catheter has a tapered or rounded edge to provide an atraumatic leading tip so that it does not
3 puncture, dissect or otherwise cause trauma to the patient’s vasculature when it is being
4 advanced into the patient. But the ’910 Patent does not describe catheters with rounded or
5 atraumatic leading tips and, to the contrary, illustrates catheters having blunt tips. (*See e.g.*,
6 ’910 Patent at Figs. 10A-10B.) Thus, the claims must be referring to something else when
7 using “shaped to be intravascularly advanced.”

8 50. Another aspect a person of ordinary skill in the art may consider is whether the
9 catheter has a pre-set curve somewhere along the catheter length. However, the ’910 Patent
10 does not describe catheters having pre-set curves and it does not describe the range of radii of
11 curvatures for the catheter, which would be needed to understand the shape of the curve.
12 Thus, the claims must be referring to something else when using “shaped to be
13 intravascularly advanced.”

14 51. I am not aware of any other interpretations of “shaped to be intravascularly
15 advanced” other than those discussed above. Because the ’910 Patent does not provide
16 information to support those interpretations, a person of ordinary skill in the art would not
17 have understood how the catheter must be “shaped” to meet the claim limitation.
18 Accordingly, it is my opinion that the ’910 Patent fails to inform a person of ordinary skill in
19 the art about the structure(s) or shape(s) falling within (or outside) the scope of “shaped to be
20 intravascularly advanced” with reasonable certainty.

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VII. DEMONSTRATIVE EXHIBITS

If called to testify at a hearing or trial, I may prepare demonstrative exhibits, such as charts and graphs, to further explain the opinions contained in this Report.

Executed on April 27, 2025, in Tokyo, Japan.

troy thornton
Troy Thornton

APPENDIX A

TROY L. THORNTON

773 Rhode Island St. San Francisco, CA 94107

laynethornton@gmail.com (415) 505-6195

SUMMARY: Results-oriented R&D leader with over 30 years of cardiovascular device design, development and management experience, including clinical training and support.

CURRENT:

2015 to Present: Consulting for medical device companies, focused on early design and development, problem-solving and IP. Also provide due diligence and technical assessment for companies evaluating potential investments and acquisitions.

PRIOR EXPERIENCE:

June 2012 – December 2014: Program Director, Abbott Ventures

Responsible for technical assessment and analysis of potential investments in cardiovascular and non-cardiovascular medical device technologies.

- Worked with the Abbott Ventures team with a primary focus on technical due diligence for cardiovascular investment / acquisition opportunities.
- Worked with Abbott Vascular Structural Heart senior management to develop and implement a broader structural heart business strategy.

June 2000 – May 2012: Vice President, Research & Development, Evalve, Inc., Menlo Park, California (acquired by Abbott Vascular in 2009)

Responsible for managing all aspects of research and development for a novel cardiovascular device implant and delivery system.

- Led the R&D team in developing the MitraClip percutaneous mitral valve repair system, consisting of three complex catheters and a permanent mechanical implant.
- Included physician training, field clinical support, Clinical Specialist training, and analysis of clinical results.
- *The MitraClip system is currently available in over 30 countries, was approved by FDA in 2013, and is currently a >\$900 million product line for Abbott Vascular.*

June 1995 – May 2000: Project Manager, Prograft Medical, Inc. (1997 acquired by W.L Gore & Associates, Inc.) Sunnyvale, Calif.

Responsible for development and successful commercial introduction of a bifurcated, modular stent-graft used in the treatment of abdominal aortic aneurysms ('Excluder').

- Designed and built the first prototypes, conducted acute and long-term animal studies, and managed the overall project from inception through initial commercialization (outside U.S.).
- Hired and managed a team of six engineers and three technicians.
- Worked closely with clinical and regulatory departments in writing IDE filings, instructions for use, and clinical protocols.
- Developed physician and in-house training materials. Trained Gore clinical specialists and sales associates worldwide.
- Provided physician training and case support during the U.S. IDE trial.
- Supported physicians during five live case transmissions at endovascular symposia worldwide.
- *Result was exponential growth of implants from 140 in 1998 to 600+ in 1999, with total sales generated of over \$5 million prior to initial market release. Product is currently >\$350 million product line for W.L. Gore.*

August 1989 – May 1995: Project Group Leader, Senior Engineer for Advanced Cardiovascular Systems (Guidant), Santa Clara, CA.

1993 – 1995: Project Group Leader, Perfusion PTCA Catheters

- Responsible for conceiving, prototyping, and testing innovative coronary perfusion catheter concepts. Proved feasibility, and filed two patents relating to the most promising concepts.

1989 – 1993: Senior R&D Engineer, Rapid Exchange PTCA Catheters

- Developed an elliptical coronary PTCA catheter from initial concept to market launch. Responsible for catheter design, material selection, process development, performance testing, physician evaluation, and animal studies.
- Direct supervision of two engineers and two technicians. Managed a large project team which finalized development and implemented the design in full-scale manufacturing.
- The catheter gained 20 market share points, and became the top-selling PTCA in the U.S. with over \$60 million / year in sales.

1987 – 1989: Manufacturing Engineer, Symbion, Inc., Salt Lake City, UT

Developed and improved processes for class III medical device product lines. Developed ultrasonic welding processes for four parts of a centrifugal blood pump. Designed packaging, validated sterilization, and designed/installed a new clean room.

1985 – 1987: Process Engineer, Becton-Dickinson, Inc., Sandy, UT

Validated processes and implemented into pilot manufacturing a thermodilution catheter. Conducted cost-saving programs and process improvements on central venous catheter products.

EDUCATION: B.S. Engineering Science with Biomedical Engineering emphasis, 1985 Iowa State University, Ames, IA

PATENTS: Over 37 issued patents

APPENDIX B

Appendix B – Materials Considered

- Asserted Patents, including U.S. Patent Nos. 11,544,005, 11,865,291, 11,974,910;
- Prosecution histories of the asserted patents;
- U.S. Patent Application No. 16/117,519;
- U.S. Patent Publication No. US 2003/0116731 A1 to Hartley;
- U.S. Patent No. 7,775,501 to Kees;
- U.S. Patent Publication No. US 2011/0144592;
- Dictionary definitions of the term “support” including Merriam-Webster dictionary definition;
- The documents considered as part of the co-pending IPRs; and
- The documents considered as part of the Declaration of Troy Thornton in Support of Opposition to Plaintiff’s Motion for Preliminary Injunction.

1 **CERTIFICATE OF SERVICE**

2 I am a citizen of the United States of America and I am employed in Irvine,
3 California. I am over the age of 18 and not a party to the within action. My business address
4 is 2040 Main Street, Fourteenth Floor, Irvine, California.

5 On April 28, 2025, I served the foregoing: **CLAIM CONSTRUCTION EXPERT**
6 **REPORT OF TROY THORNTON** on the parties or their counsel shown below, by
7 transmitting it electronically to the addresses as follows:

8 **VIA ELECTRONIC MAIL:**

9

10 Amanda Tessar Perkins Coie Llp 1900 Sixteenth Street 11 Suite 1400 12 Denver, CO 80202 303-291-2357 13 Email: atessar@perkinscoie.com	Ramsey M. Al-Salam Perkins Coie LLP 1201 Third Avenue Suite 4000 14 Seattle, WA 98101-3099 206-359-8000 Email: ralsalam@perkinscoie.com
14 Daniel T. Keese DKeese@perkinscoie.com Perkins Coie Llp 15 1120 NW Couch Street, 10th Floor 16 Portland, Oregon 97209-4128 Telephone: 503.757.2000	Kendrick R. Tyler RKendrick@perkinscoie.com 1201 Third Avenue Suite 4900 17 Seattle, WA 98101-3099
18 Trevor Bervik 1900 Sixteenth Street 19 Suite 1400 20 Denver, CO 80202 TBervik@perkinscoie.com	Inari-Imperative@perkinscoie.com

21
22 I declare that I am employed in the office of a member of the bar of this Court at
23 whose direction the service was made.

24 Executed on April 28, 2025, at Irvine, California.

25 /s/ Chloe Lee
26 Chloe Lee
27 Litigation Paralegal
28